

The Green Revolution – converting post-industrial sites into urban parks – a case study analysis

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Abstract— In last decades' sustainability and redevelopment strategies have been focused mainly in the built urban environment and its artificial components. Still, in recent years, we have seen, a growing interest in the introduction of nature in cities. In fact, the accelerated growth of metropolitan areas all over the world, poses several problems not only at the environmental level but also at economic and social ones. This scenario enables the creation of a continuously changing landscape as a result of complex and interacting natural processes, coupled with planned and unplanned actions by man that influence the way urban areas grow and many times sprawl beyond former city limits, acquiring dimensions and forms that do not contribute to their sustainability. In this regard, considering that urban parks and greenways have been progressively recognized as strategic planning elements for achieving sustainable development in metropolitan areas, constituting a very important element to the quality of life of an increasingly urbanized society, this research presents the analysis of six Urban Parks that have been developed in former post-industrial sites, assessing the impact that these project had, not only in urban attractiveness but also in land value, while studying how does urban green spaces contribute to ecological, social and economic sustainability of metropolitan landscapes. Besides general approaches used considering data collection and analysis, other methods were used, throughout the present research (interviews with key participants; project analysis; and site interpretation), bearing in mind not only the importance of the project but also the importance attributed to public participation and involvement in determining the way public and private powers should manage the urban fabric and the built environment. This research enabled us to conclude that the relevance and the social acceptability of a certain project should never be underestimated and that urban nature, especially urban parks are extremely important for citizens' quality of life, contributing to increase land value and sustainable city development. Furthermore, this research highlighted that Urban Parks constitutes a valued green space/infrastructure, both by experts and the general public, which contributes to strengthen the overall quality of specific urban spaces.

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I. INTRODUCTION

URBAN parks are an important part of a diverse urban ecosystem network that generally provide significant ecosystem services, aiding urban communities economically, environmentally, aesthetically, and recreationally. Still, urban parks and other green infrastructures as we know them today are the result of a deep and long evolution started in England during the 19th century (industrial revolution era). These urban greenscapes represent currently one of the most relevant components of modern cities, since they often contribute to restore natural processes and functions, create multifunctional landscapes and promote sustainable development [1, 2, 3]. However, the complexity of these spaces, evident in the number of different ways in which they have been characterized, both in the literature and by designers and other specialists who worked and/or analysed them, make urban parks' role in urban development, hard to explain and even more difficult to envision and design, specially when they result from the reinvention of underused or abandoned spaces as is the case of post-industrial landscapes.

Nonetheless, it is increasingly recognized that urban parks and other open spaces are a critical component of any state, regional and local infrastructure plan, since they promote core values at stake in building public infrastructure: providing children the simple joys of playing; improving health and recreation; granting equal access to public resources; enabling democratic participation in deciding the future of the community; enhancing economic vitality for all with increased property values, local jobs, small business contracts, and affordable housing; and promoting sustainable planning coupled with several environmental benefits [4].

The last years we have seen a tide of interest sweeping across Europe in the development of nature in cities, and an increasing amount of landscape development in urban areas [5, 6], since they have significant ecological, social and economic functions. In this regard it is recognized that urban parks represent an important part of the complex urban ecosystem network providing as mentioned before significant ecosystem services, benefiting urban communities environmentally, aesthetically, recreationally, psychologically and economically

[7, 8, 9, 10]. In fact, a functional network of green spaces is important not only for the maintenance of the ecological aspect of a sustainable urban landscape [11, 12, 13], but also to enhance the quality of life in the urban fabric.

However, in order to achieve these goals, it is essential to follow all dimensions of sustainable development (environmental, social and economic) at the same time and with the same weight, bearing in mind the principles presented in Florence in October 2000 in The European Landscape Convention, where the Council of Europe quoted that to achieve sustainability, development should be *“based on a balanced and harmonious relationship between social needs, economic activity and the environment”*. Considering this, one should notice that public open spaces that are well designed and well maintained can provide areas for appreciating nature, as well as for recreation and sport. The benefits, though hard to measure, include improvements in people’s physical and mental health. These benefits are even greater when the green space/urban park raises from ruins of former industrial buildings and infrastructures generally abandoned in the urban fabric.

Still, even if land transformation projects, strategies and methodologies have been considered an important tool for urban development, fostering revitalization and the creation of urban green spaces [14, 15, 16], these contributions and the principles they integrate, have not been adequately assessed regarding postindustrial land transformation efforts. Throughout the last decades several researchers and academics have been committed with the development of strategies that enable the creation of better landscape transformation projects, which are normally excessively subjective and dependent on the designer’s determination, fact that is considered to be a limitation. For this reason, new frameworks and methodologies are required.

However, these methodologies require the use of several methods throughout the research, including quantitative and qualitative strategies, which at their best are not linear methods but circle back upon issues, principles, and information, as many times as necessary.

This paper addresses six different urban parks that were reclaimed out of post-industrial infrastructures in which it was possible to create balanced landscapes both at economic, social and environmental levels with potential to fulfil sustainability goals, paying special attention to landscape quality and efficiency, carefully using natural resources, and involving stakeholders in the process during its different stages, once active public involvement and a healthier dialogue between political representatives, residents and economic actors is essential to find better solutions for sustainable city planning.

II. METHODOLOGICAL APPROACH

Considering the approach according to which, learning by experience is considered a proficient tool for urban

redevelopment the used methodology was divided in two main sections: case study identification (developed projects – learning by experience) and case study analysis (site specific characteristics and unique characteristics of each project). In this regard the analysis of best-practice examples of urban parks built in post-industrial sites constitute the basis of the proposed framework.

The used research strategy is considered a very important method since it allows not only the analysis and comparison among similar case studies, but also the development of a systemic analysis, where the subjective component is much smaller.

This method is according to Francis (2001) a very useful tool to study and analyse existing projects and the way in which certain problems and design constraints were solved and which strategies should be followed or avoided [17]. The use of this method will enable the acquisition of a set of information that may inform the creation of a specific theoretical basis to increase the quality of similar redevelopment proposals [i.e. researching and analysing the practical principles applied in successful urban parks built out of post-industrial landscapes in order to identify the principles that may inform the creation of specific design theory].

III. CASE STUDIES

Considering the afore-presented methodology the selection of study areas constitutes an essential component of the research, representing an important aspect to the accomplishment of the present study. In this regard, the selection of “best-practice” case studies considered a set of predefined parameters.

Regarding the selection of “best practice” case studies, the process was anchored in the collection and analysis of as much urban park projects as was possible within the boundaries set by schedule and economic constraints.

Considering these aspects six urban parks were selected according to their specific characteristics that made them significant not only in terms of urban attractiveness but also regarding land value and ecological, social and economic sustainability of the urban landscapes in which they are inserted.

2.1 Anchor Park – Malmo, Sweden – enhancing green infrastructure under ecological considerations

Designed by the SLA Landscape Architects this former industrial harbor, of approximately 3 hectares, was transformed into a densely vegetated city park for the 2001 Housing Expo. Costing around 4 million Euros, the park has been nominated for the 2003 Mies Van Der Rohe Award, as recognition to the adopted design approach.

With the objective of developing a park which recreates the diversity of the Swedish nature under ecological considerations, the designers shaped different types of biotopes that relate to each other, such as oak woods and alder marshes. The intention was to create a park which will evolve

continuously without any maintenance requirements. Although created as a city park, the applied design strategy enabled landscape architecture to emulate nature as far as possible.



Fig. 1 –Anchor Park – Malmo, Sweden – Source: SLA Landscape Architects – all rights reserved

2.2 Brickworks Park – Toronto, Canada – a strategic balance between economic and ecologic issues

Located in the heart of Toronto and Designed by Michael Hough the Brickworks industrial site is one of Canada's most significant brick manufacturers for nearly a century. When the brick making ceased in 1989 the site received great attention considering the definition of its future use. Its location in the Don Valley coupled with the existing industrial heritage converted it into a significant link in a chain of natural and cultural places. The proposed design strategy aimed at a first level to heal the Don River while promoting conditions to link heritage and environmental restoration.

In this regard, the developed program, while providing additional green space for Toronto's residents, enabled the creation of a Park inspired by a strategic balance between economic and ecological issues. Viewed as an ongoing process of renewal and healing this park project considered several key design principles based both on biological, socioeconomic and political aspects, and in a thoughtful comprehension of the site.



Fig. 2 – Brickworks – Toronto, Canada – Source: Wikimedia commons - Loozrboy – all rights reserved

2.3 Docklands Park – Melbourne, Australia – a new green civic center

Designed by Rush & Wright Associates and Ashton Raggatt McDougall Architects, this park was inserted in the Master plan for the Melbourne Docklands, the former industrial site has been transformed into a city park, forming together with the Grand Plaza redevelopment the new Harbor Esplanade. This 2,5-hectare project aims to be the green civic center of Melbourne Docklands, providing a multifunctional area for the city waterfront. The proposed approach did not consider the industrial heritage; instead it arranged the site with a curvilinear line arranged from north to south which together with strong artificial landforms divides the park. Different design strategies were used for each side. While the east side is more artificial and includes most of the program, the west side is more natural and considers an ecological approach, as it is the case of the reed beds for storm water filtration.



Fig 3 – Docklands Park – Melbourne, Australia – Source: Australiaunlimited - Kershaw – all rights reserved

2.4 Hiriya Park – Tel Aviv, Israel – the public park as green lung for the metropolitan area

Designed by Latz + Partner this enormous mountain park, with approximately 45 hectares and a height of 60 meters, which stands out as a focal point in the Ayalon plain, was formerly a huge landfill. Though the process of household waste deposition was stopped in 1999 the rehabilitation development only begun in 2001 when an international competition for reclaiming the mountain was launched. The strategy adopted by the competition winner was to maintain the exterior shape of the mountain, with the implementation of trees around it to provide stability for the mountain base, while in its interior an open and public Mediterranean park was created, with a fountain in the center symbolizing nature. This project is part of the larger development of the Ariel Sharon Park, planned as a green lung for the Dan metropolitan area in which the lack of green areas is increasingly acknowledge as a significant urban problem.



Fig 4 – Hiriya Park – Tel Aviv, Israel – Source: searchnow.go2tutor.com – all rights reserved

2.5 Millenáris Park – Budapest, Hungary – the public park as green lung for the metropolitan area

Designed by Kovács, Lendvai, Muszbek, Pozsár, Tihanyi and Wallner the Millenáris Park correspond to one of the main transformation projects of the Ganz area. The conversion of the former industrial into the Millenáris park is considered one of the most important rehabilitation projects in Hungary. The park is conceptually divided in two different parts - motivation / creation - still, it is one large continuous space where several cultural buildings co-exist in harmony with the surrounding natural features. In fact, the definition of a permanent cultural program was from the beginning, as important as the design of the park itself. In order to create a singular experience to those who visit the park, designers deprived usual urban and natural elements from their original context, putting them on unexpected positions, trying to create a sense of place based on the uniqueness of the park.



Fig 5 – Millenáris Park – Budapest, Hungary – Source: Budapest Events Guide – all rights reserved

2.6 Parc de la Cour du Maroc – Paris, France – a multipurpose program for the urban revolution

Designed by the “consortium” composed by the atelier Corajoud: Landscape Architects Claire and Michel Corajoud, Landscape Architect Georges Descombes and A.D.R. Landscape Architects this Park constitutes an unpaired example of a post-industrial landscape reclamation project. The project consisted in the conversion of a former warehousing and railway tracks district with 42.500 square meters and a narrow shape into an exciting urban park. The design strategy was inspired by the former rail tracks, using linear shapes and parallel zoning. To contradict the rational and functional layout, the plan represents slight level changes and employs diversified materials. This arrangement was supported by a multipurpose program fitted for an urban context, with leisure and sports activities and relaxing and quieter areas. Regarding the vegetation, diversity was also employed to contradict with the rational display, establishing from aquatic plants to deep meadows.



Fig 6 – Parc de la Cour du Maroc – Paris, France – Source: Mee3Zaa – all rights reserved

IV. DISCUSSION AND CONCLUSIONS

In the context of this study, the role of urban parks as a provider of social services and their importance for city sustainability has been highlighted.

This research enabled us to conclude that the relevance and the social acceptability of a certain project should never be underestimated and that urban nature, especially urban parks, is extremely important for citizens' quality of life, contributing to increase land value and fostering sustainable city development. Furthermore, this research highlighted that urban parks constitute a valued green space/infrastructure, both by experts and the general public, which contributes to strengthen the overall quality of the urban spaces in which they are inserted.

Moreover, the analyzed case studies highlighted the fact that the incorporation of people's preferences and needs in urban parks is a safeguard to achieve success and to develop a sense of belonging, which reinforces project acceptability especially by local citizens. This is particularly important in areas where project development might be somehow controversial.

Additionally, the analyzed case studies enabled us to conclude that even if public perception towards urban parks is generally positive, it is significantly greater when the park is built on a derelict or abandoned landscape/infrastructure. This reality reinforces the fact that more than creating/designing urban parks city developers and decision makers need to consider that instead of consuming existing green spaces they should promote the transformation of previously developed areas which are currently abandoned or underused. Besides this, multi-functionality and ecological approaches continue to be valued aspects in urban park design.

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