

From Industrial to postindustrial landscapes – brownfield regeneration in shrinking cities

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Abstract: - In last decades, the phenomenon of shrinking cities has many examples in most developed countries. Old industrialized cities of Europe have led to shrinking, in some ways similar to those in American metropolises like Detroit, Pittsburgh, and Cleveland. This is particularly the case of Eastern Europe, where the combination of post-socialist and post-fordist transformation processes led to exceptionally severe shrinkage phenomena. The shrinking city syndrome is leaving planners and city officials with, among other things, the challenge of preserving and reusing buildings with architectural and cultural interest. Derelict and contaminated industrial sites are unrealized resources for initiating urban regeneration and ecological restoration. To exemplify the importance of those spaces in the urban landscape, this presentation will analyze two industrial landscape reclamation projects realized in Portugal during the last decade (Parque Tejo-Trancão-Expo 98 and Braga Stadium-Euro 2004) and compare them with other examples from around the world. The significance of those projects to achieve a sustainable urban landscape is discussed. This presentation will show that the industrial landscape should be viewed as a resource and its recovery as an opportunity to develop new multi-functional landscapes.

Key-Words: - Brownfield, sustainability, shrinking smart, landscape reclamation, land recycling, city regeneration.

1 Introduction

In last decades, the phenomenon of shrinking cities has many examples in most developed countries. According to Wiechmann [1] 54% of the European cities lost population in the period from 1996 to 2001. The phenomenon of urban shrinkage is based on several processes of transformation. The number and aggregate size of brownfield sites in the cities of Europe is increasing. In many developed countries, which in past decades have experienced the impact of shrinkage processes, the essential causes have been suburbanization, deindustrialization, demographic shrinkage, and post-fordist transformations.

Lisbon is in the 10 cities with the highest relative loss of more than 1.75% annually. Old industrialized cities (typical examples are Glasgow, St. Etienne, or Gelsenkirchen) has led to shrinking, in some ways similar to those in American metropolises like Detroit, Pittsburgh, and Cleveland. This is particularly the case of Eastern Europe, where the combination of post-socialist and post-fordist transformation processes led to exceptionally severe shrinkage phenomena. Certainly, urban shrinkage as such is not a new phenomenon and according to Beauregard [2] is inseparable from the history of the city. Numerous studies have analyzed its

manifestations and causes and the development and decline of cities has been viewed as a natural process whereby urban change results from a life cycle that ends in inevitable decline [3], that may pass from can be seen to go through four successive development stages: urbanization, suburbanization, de-urbanization and re-urbanization.

“In the opening years of the twenty-first century, that seemingly old-fashioned term landscape has curiously come back to vogue” [4] and with him the necessity to reclaim derelict landscapes in detriment of consuming new landscapes. For this reason, “Industry, the source of every evil and every good, became one of the main protagonists in the transformation of the city” [5]. In this context the effects of the globalization of industry over the past decades had a profound effect on the traditional industrial areas all over the world and produced a vast array of obsolete industrial facilities with various impacts generated from them [6]. The formal products of the modernist movement have become obsolete, forcing this generation to decide on the disposition of the last generation's industrial environment. Furthermore the international industrial climate, which some have termed the ‘third industrial revolution’ [7], has rendered obsolete the industrial

structures, technologies and processes of the first half of the twentieth century. Abandonment, sale or demolition of such spaces, were fairly common approaches to deal with facilities that were designated as ‘surplus’ no longer serving their original production functions [8].

However, the creation of new and more severe environmental legislation, and the public pressure related with the need to protect the environment, increased the necessity of converting post-industrial sites into multifunctional landscapes [9]. Derelict and contaminated industrial sites are unrealized resources for initiating urban regeneration and ecological restoration [10].

These sites are often in advantageous locations near city centers, along waterfronts, supported by existing infrastructure and adjacent to residential communities. These Landscapes are environmentally impaired assets that need to be returned to productive use, and reintegrated into the surrounding community. Therefore, if this landscape reclamation work was made at a larger scale and across multiple sites, this effort could restore natural processes and functions, regenerate several areas of the city, create multifunctional landscapes and promote sustainable growth [11].

The shrinking city syndrome is leaving planners and city officials with, among other things, the challenge of preserving and reusing buildings with architectural and cultural interest. We believe that exist many places in the world where Man have destroyed Nature, and then, being aware of what he was doing, have tried to fix it. We think that people, in general, must be fed up to hear of how bad is Man towards Nature and want to see some success stories of restoration.

To exemplify the importance of this kind of projects in the urban landscape, this paper will analyze two industrial reclamation projects realized in Portugal during the last decade (Parque Tejo-Trancão-Expo 98 and Braga Stadium-Euro 2004). We will show how Man "re-building" the things he has destroyed make people aware of what Man is doing to fix some of the Environment issues. The significance of those projects to achieve a sustainable urban landscape will be also discussed.

2 The shrinking city syndrome

A decade ago, the prevailing wisdom was that cities will should grow, sprawling ever wider. Shrinking cities were considered a problem, the result of isolated economic upheaval or traumatic political events.

"Smart growth" became a rallying cry.

In fact, while city dwellers make up nearly half the world's population, new research by the United Nations and other demographers has shown that for every two cities that are growing, three are shrinking [1]. Some cities that were bustling centers of commerce just a generation ago have become modern-day Pompeiis.

Cities that have lost more than a third of their population include St. Louis, Phnom Penh, Johannesburg, Manchester, Liverpool and Gelsenkirchen (figure 1). More than 450 cities with populations above 100,000 have lost 10 percent or more of their populations since 1950, including 59 in the United States with most important the Detroit metropolitan area. Ivanovo, Russia, a state-sponsored manufacturing center in the days of the Soviet Union and the Halle-Leipzig of East Germany are significant examples of the post-fordist dramatic transformation and fast economic adaptation. In Manchester, England, where the population has fallen by 48 percent since 1931, dress patterns still hang on the walls of derelict textile mills and in the former East Germany, which experienced a mass exodus after the Berlin Wall fell in 1989, dozens of midsize cities have shrunk, forcing those left behind to grapple with job losses, empty schools and a falling tax base.

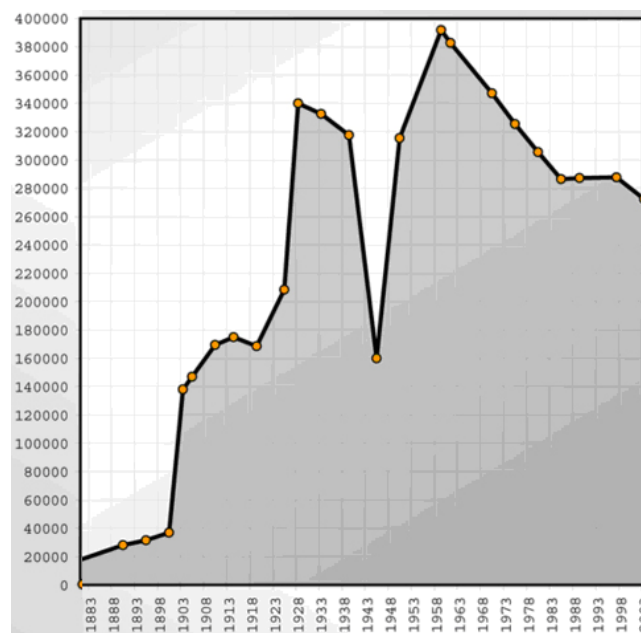


Figure 1. Population statistics for Gelsenkirchen 1880-2003.

3 From post-industrial sites to multifunctional landscapes

The history of the contemporaneous city was influenced by the accumulation of different visions,

different urban models and mainly by significant changes in consumption and production patterns. The end of the twentieth century has brought a break in the industrial sector which brings with it an accelerating obsolescence of several industrial landscapes [12]. The entire industrialized world is experiencing similar effects of the restructuring of the global economy, the automation of production processes, and the relocation of industry to areas characterized by low production costs.

This process termed 'deindustrialization' created severe economic, social and ecological repercussions [13]. The Industrial Era left behind a legacy of derelict landscapes. Urban core areas became economically disadvantaged, socially distressed and environmentally degraded through industrial contamination and process decline [14, 15]. For this reason reclamation projects should redefine the post-industrial landscape through community-based, interdisciplinary action that integrates longer-term solutions based on social, cultural, economic and ecological objectives.

On the basis of the assumption above, the enhancement of the urban areas through the reclamation of the post-industrial metropolitan habitat, for an improvement of the quality of life supplies a series of plugs to achieve the sustainable town. The reclamation of these landscapes needs to be thought in terms of the reconnection town-nature, but knowing 'a priori' that greening is not enough to assist the rebirth of a place. More than greening, these landscapes need to be redeveloped in an integrative multifunctional way, emphasizing that sustainable landscapes should offer different multi purpose uses, in order to be more attractive and viable.

For this reason several countries of the European Community (EC), as well as several states of the United States of America, have begun to embrace the notion that the industrial landscape offers unique opportunities to be redeveloped as multifunctional landscapes, viewing their value to society in a broad way. They discovered and recognized that more than ecological reclamation opportunities those sites embodied alternative social, cultural and economic values. Numerous recent international design competitions for the reuse of enormously scaled industrial sites all over the world have tried to promote sustainable development and build up multifunctional landscapes. Downsview Park, located at derelict military air base in Toronto and Fresh Kills reclamation project, the world's largest landfill on Staten Island, New York, are representative of these trends and present the most fully examples of landscape reclamation practices applied to the post-industrial sites in North America [16]. In Europe,

various Landscape Architects, Planners and Urbanists worked hardly for ten years in the Ruhr Valley, Germany exploring innovative possibilities for waste lands. Those competitions showed that perceptions concerning what constitutes reclamation has changed and now reflects environmentally cognizant sensibilities and contributions from a broad array of specialists [17] because more than greening it is necessary to create condition that attract people to those recycled landscapes.

3.1 The international experience

The shrinking city syndrome is leaving planners and city officials with, among other things, the challenge of preserving and reusing buildings with architectural and cultural interest (figure 2).

"Planners, developers and some architects see these wastelands and they say, Let's just make it a tabula rasa. Let's just knock it down and start again," said Dan Dubowitz, an architect in Glasgow. "They don't think imaginatively about how culturally rich these structures can be."



Figure 2. A regenerated former mining settlement in Gelsenkirchen.

The Zollverein industrial complex in Ruhr-Germany consists of a historical coal-mining site infrastructure, with some 20th-century buildings of outstanding architectural merit due to application of the design concepts of the Modern Movement in architecture in the industrial context. It constitutes remarkable material evidence of the evolution and decline of an essential industry over the past 150 years. It has been inscribed into the UNESCO list of World Heritage Sites since December 14, 2001 and is one of the anchor points of the European Route of Industrial Heritage [18].



Figure 3. Zollverein, built in Bauhaus style, was opened in 1932 and is considered an architectural and technical masterpiece. Earning it a reputation as the “most beautiful coal mine in the world”, welcomes 200,000 visitors a year [18].



Figure 4. New uses for the old industrial landscapes of Germany like boardwalks, scuba diving or ice skating are some of the many new ideas for the regenerated site.

Existing urban revitalization models consist of social (e.g., decreasing crime, encouraging community development), economic (e.g., creating

new jobs, creating economic stabilization), political (e.g., improving efficiency of management), and cultural (e.g., creating a sense of belonging, promoting community regeneration) factors but have not considered the impact of the built environment.

The new urban revitalization model incorporated the built environment factor with the four existing factors (i.e., community, economic, political, and cultural). In the model, each existing factor contributed to the built environment factor.

Detroit has been going downhill for many years (the 10th-largest city of USA with 961,000 people - down from 2 million in 1955) and the decline of General Motors has taken the problem to a whole new level, with many doubting whether Detroit will ever recover. However, converting thousands of vacant parcels into urban agriculture was one of the regeneration plans for the city. Urban farming was an ideal way to increase the value of vacant lots and other abandoned property. Atkinson and Lindsay Turpin, the Garden Resource Program coordinator, say the benefits of urban gardening are vast. Not only does it provide fresh, healthy food, but it beautifies communities and raises property values, as well as provides opportunity for inter-generational contact. Older people from down South take immediately to community gardens, as do younger kids,

3.2 Portuguese advertised industrial landscape reclamation projects

Even though the known relevance of post-industrial landscape reclamation projects to achieve sustainable development, in Portugal there is still a long way to go, once in the private sector view it is more cost effective to build new facilities than to renovate existing, older facilities. Therefore the reclamation projects that had been realized are several times associated with other events as it is the case of both case studies analyzed in this article. For this reason the current practice of post-industrial landscape redevelopment is primarily site-specific and driven by economic development motivations, which does not offer the full potential for sustainable reuse and revitalization that extends beyond property lines.

3.2.1 Parque Tejo-Trancão - Expo 98

Park Tejo-Trancão is one of the best examples of a post-industrial landscape reclamation project ever realized in Portugal (figure 5). It is located in the oriental part of Lisbon, in the right margin of the river Tejo, in a transition area between the municipal districts of Lisbon and Loures. Before being a park,

this area was composed by several industrial structures (a landfill, scraps, a sewage treatment plant and some obsolete industrial buildings). The high indexes of contamination and degradation of this landscape, the proximity of the Natural Reserve of the Estuary of Tejo and the intention to develop the world exposition Expo'98 constituted decisive arguments for the intervention in this specific area. With approximated 90ha, the park links physics and thematically with the Park Expo'98 [19].



Figure 5. Past, present and future of the landscape of the Park Tejo-Trancão.

The main objectives of the project were the creation of a new public space, redirecting the expansion of the city and re-establishing the relationship between city and river, the increase of the value of the residential complexes to be put up in the redevelopment area, the increase of public awareness through this kind of projects and the

creation of a large green area within the city with several activities to all ages.

The situation of ecological degradation, the high pollution indexes, provoked by the industrial occupation, the unacceptable pollution in the river Trancão and the landfill created problems of soil, water and air contamination, reason why the area of the project was one of the most polluted areas of the metropolitan area of Lisbon and why it was created an experimental area to define the criteria for the selection of the vegetation to the all area, through determination of the resistance and adaptability of the various species to this environment.

Making part of this, the Park of Tejo-Trancão ambioned to recover and defend both river's outlet, as well as, the ecological regeneration of the whole area, busy for pollutant and obsolete industrial facilities. This action, whose intent was the conversion of a degraded and obsolete space to a new multifunctional public place for the population of the city, would reveal a new landscape, a landscape hidden by dereliction. The park brought many benefits, once it implicated not only the decontamination and the greening of the place, but also the creation of attractive conditions, through the construction of a great multifunctional quality space where citizens could enjoy the riverfront area [20]. This is probably the reason why nowadays this space is one of the most utilised public spaces of the Metropolitan area of Lisbon.

The conceptual solution proposed by PROAP-studies and projects of Landscape Architecture and Hargreaves Associates analysed the problems of the place, converting them in opportunities of artistic expression. Besides the ecological and functional sense of the proposed structure, the solution serves the parallel intention of establishing a spatial organization to translate a coherence and formal unit reading the group. The scenic values were also essential in the development of the concept of the park, supported by the creation of visual corridors and by the establishment of elevated platforms of observation of the exceptional views on the river and the marsh.

The project developed a unit that answered to the several selected uses of the program: sport recreation areas, sport competition areas, areas for cultural activities, passive recreation areas and environmental education areas. The sport recreation areas included tracks for bicycles, docks for fishing, ramps for small boats, thematic parks and an equestrian centre. The sport competition areas incorporated a golf academy, several tennis courts and informal lawns for active sports as soccer and rugby. The areas for cultural activities are informal spaces for musical exhibitions,

theatre and any other cultural event [21]. In this way the elements of the program promoted flexibility for a wide range of activities by the creation of numerous informal spaces in the organization of the park, that provide varied social, cultural and physical activities.

The implementation of the park's project was proposed to be accomplished in three phases, once the financing for its construction depended on the sales of the urban components of 'Vila Expo'. The first phase of the park corresponds to the construction of the south side of the park, which was accomplished during 1997. Once concluded those works, the reorganization of the elements of the project began. In this phase were defined the marsh areas, the location of the recreational facilities and of the connections to the adjacent areas of the park and the plantations. The works relating to the remaining areas contemplate a large natural area, which utilization is assured by the introduction of several recreational facilities, and have a conclusion foreseen for 2010 [21].

This project has had a great importance to the Portuguese country once it showed that issues facing the industrialized world in regard to the reconstruction of the industrial landscape are multidimensional, involving cultural, social and economic ramifications, emphasising the fact that greening is not enough, which is the main reason why it should be seen as an example for future interventions.

3.2.2 The quarry of Braga transformation to Stadium for Euro 2004

The extractive industry implies, normally, a temporary use of a specific landscape, once this activity consists on the exploitation of non-renewable resources [22, 23]. So this activity usually leaves behind spaces with a huge potential to the creation of multifunctional landscapes, which is the example of the Braga Municipal Stadium, (figure 6) which was created on the mountainside by levelling down a quarry of the mountain Monte Castro and served as a hosting venue for the Euro 2004 tournament. The project offers an unusual and innovative frame and his architecture is a sequence of sustainable decisions which should be listed and analysed. The Braga Stadium was projected by the architect E. Souto Moura and constructed in a derelict quarry located in the urban area of Braga in the North of Portugal. The stadium is just a part of the sports complex built in an area occupying more than 74 acres. A space that includes the stadium, Olympic pools, and several other multifunctional facilities all linked by numerous accesses where it is possible to contact

with nature, feeling the spirit of the old landscape – the quarry. The vegetation was used to increase the quality of the place, by creating alignments that direct people to the different areas of the project.



Figure 6. The quarry of Braga rehabilitated to a new Stadium used for the Euro 2004 football championship.

4 Conclusion

The reclamation projects of derelict industrial areas should follow design principles that promote sustainability, reduce negative environmental impacts, and foment economic prosperity, social inclusion, multifunctionality and better quality of life. For this reason reclamation projects should reinforce landscape character taking into consideration the spirit of the place and integrating the pre-industrial existence in the new multifunctional landscape, in order to achieve sustainable development, not only environmentally, but also culturally, socially and economically [25].

After the analyses of this article it is concluded that in Portugal the post-industrial landscape is commonly experienced negatively as fragmented and incoherent because it is difficult to conceive a legible whole. The projects presented constitute representative examples of post-industrial landscape reclamation in Portugal enabling a sense of spatial enlargement, with high degree of complexity, richness in discontinuities and with diverse ecological and social benefits, once more than just greening the derelict site, those project had create conditions to different types of uses. Those values of conservation, making wise use of resources, and public participation in the planning process, are valid and defensible premises on which to base the reclamation process [26]. Recovery efforts for the post-industrial landscape are mixed, producing various positive and negative impacts, satisfying various constituencies to

certain extents with different formal and programmatic results.

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