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Landscape constrains: opportunities for creative and sustainable landscape design

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Introduction

This paper aims to demonstrate the potential of “landscape constrains” as significant assets in landscape planning and design. Constrains underlie, among other factors, landscape character, therefore being crucial to its assessment and for creative and sustainable design. Identifying constrains enables to understand land degradation and, therefore, searching strategies for land improvement starting from the components that actually exist, instead of trying to induce new features considered to be more sustainable. Involving thoroughly “constrains” into design can contribute and strengthen landscape resilience since it accepts that negative assets can evolve towards good landscape, therefore contribute to better design. This is to be explained through the analysis of the landscape design approach and the identification of the results of three different case studies in Portugal within a much diversified landscape contexts.

Literature Review

The 20th century approach to landscape planning and design has been largely supported by the analysis and diagnosis of the qualities and values of the land (Lyle, 1985), and further development of design proposals that use those properties framed by a conceptual approach, and aiming to the public common good (Ribeiro and Barao, 2006).

Negative aspects of the landscape have been considered under a remediation perspective which in many cases have produce good mitigating results. However, it is here hypothesised that constrains can also be approached under a pro-active perspective promoting its inclusion in design, and decreasing costs related to remediation, removal and construction of new designed landscapes. They can also enrich design inspiration sources and further developed landscape theory. As Swafield refers (2002), landscape theory aims to: a) Explaining landscape (assessment and perceptions); b) Supporting planning and design decisions (problem-solving solutions); c) Framework can be found based in common issues in design and planning approaches, namely between practitioners.

Diverse design approaches, such as the ones based in urban ecology, claim that ecosystems have to be improved so to produce better eco-services (Brueste et. Al, 2013), showing an attitude based on the search for values and never supporting proposals upon constrains. Although this is desirable, it is believed that constrains can also be inspiring, contributing to a better design. Dealing with constrains designers admit that negative landscape assets can evolve to towards good design with no need to erase them. This is less costly and seldom enables to reach better local communities and their participation in landscape design. In this sense the landscape is perceived as capable to recover, based upon by their own features (being values or constrains), therefore accepting its resilience: the capacity that systems have to reorganize and recover from change and disturbance (Ahern, 2011).

The assessment of landscape value driven by concepts of qualities which do not include constrains or negative assets can be better understood through the evolution of nature conservation and heritage protection movements and its relation to landscape design, planning and management. The nomination of landscapes as world heritage under the UNESCO list constitutes probably one of the most significant example. Landscape quality have been supported by the presence of resources, aptitudes, balanced ecosystems, among other issues. However, landscape diversity of contemporary landscape is also determined by the existence of abandoned, polluted, infested and economic unviable land.

The diversity of landscape have become a recognized value such has under the European Landscape Convention (Council of Europe, 2004). The convention claims that not only outstanding landscapes are worth of protection. The vast mosaic of different landscapes is a value in itself, with great advantages for territories development. Therefore it can further be advanced that the aptitudes, resources and values are not the only factors that should support good landscape design. Actually together with these qualities, components that make each landscape different from each other, despite assessed as “good” or “bad”, are in the base of its character. They can contribute for sustainable creative landscape design approaches that strength the uniqueness of the final landscape work. In this sense constrains can be the starting point and support the capacity of the land to evolve and overcome degradation hence contribute to landscape resilience.

Goals and objectives

The goal of this paper is to show that constrains can be as important as qualities in landscape design. More specifically it is intended to demonstrate that abandoned territories that show evidences and testimonies of previous

activities that became not viable can evolve towards good landscape for the good of local communities and public in general. They can produce places for leisure, environmental and aesthetic improvement through a less costly process. These goals and objectives are here discussed through the analysis and reflection on three landscape design projects coordinated by the authors.

Methods

The significance of constrains to better understand landscape resilience, and as inspiring assets, will be discussed through the analysis of design approach and the identification of the results of three different case studies in Portugal within different metropolitan landscape contexts. The method includes a parametric analysis of site constrains, their permanence on the parks' design, followed by a qualitative reflection on their contribution to the success of each project, hence on landscapes' resilience upon which the projects were established.

Each project will be analysed in terms of the following aspects: 1st) Project objectives; 2nd) Landscape analysis, identifying constrain issues and how they relate to existing landscape character and current uses; 3rd) Use of the identified constrains in the design process and discussion of their permanence and role on constructed parks.

Discussion is made on how constrains have determined landscape design and how the resulted form is now used by the public. Conclusions were further advanced whether constrains can contribute to the capacity that landscapes have to reorganize and recover from change and disturbance.

Results and discussion

The thesis – landscape constrains contribute to better design and strengthen landscape resilience – is to be discussed through the analysis of three case studies, occurring within deeply different contexts of landscape character but that lead to community acceptance and lasting results: a) *Santa Luzia Gardens* in the core of Funchal (main city of Madeira Island); b) *Flamenga Public Park* in Lisbon Metropolitan Area (LMA); c) *Tagus Linear Park*, a public greenway throughout the northern part of LMA.

SANTA LUZIA GARDENS, MADEIRA ISLAND

Santa Luzia Gardens (Topiaris, 2003) with an area of 1,7 ha, occupies a core zone of Funchal (Madeira main city). Though very touristic the city has not a consistent supply of public space for recreation throughout all its districts.

The concept (celebration of Madeira's natural and cultural landscape) aimed to create a park that uses archetypes of Madeira's landscape (indigenous vegetation, water canals network, agricultural terraces and recreational estates) in a contemporary way. The abandoned industrial area that determined the former derelict landscape was seen by authorities as constrains to be remove as the only way to create a new garden that could attract residents and tourists.

The design approach proposed alternatively that the features considered as constrains – retaining walls, brick chimney, sugar-mill machinery, among others – could work as assets to inspire design. Besides, their conservation would save demolition and construction costs, using the uniqueness of the site possible to reconcile with a design that would celebrate the overall Madeira's landscape. Retaining walls became water falls, platforms provided view points over the garden, terraces enable the interpretation of farm landscape, whereas the old brick chimney and sugar-mill machinery became differentiating elements. Santa Luzia Gardens, constructed in 2004, are currently one of the main public gardens of Funchal awarded by the professional community in granting the National Landscape Architecture Prize in 2005.



Figure 1. Santa Luzia Gardens; before (left) and after construction (right)

FLAMENGA PUBLIC PARK, LISBON METROPOLITAN AREA (LMA),

Flamenga Public Park (TOPIARIS, 2008) occupies a central area of 5 ha left free in the middle of a large residential development complex (figure 2). The area still had testimonies of a typical 18th century farm-recreation estate of Lisbon's countryside. Restoration of the heritage components together with the extension of the park became constrains for their economic unfeasibility.

The design avoided a conventional historic restoration approach. Instead, the old evidences (terraces, retaining walls, water collection systems for irrigation, and remaining vegetation) enable to assess the ecological carrying capacity of the land and assist to phase construction so to fit into the public budgets. These inherited components and land pattern became also design assets to create a park with low construction and maintenance costs. The identification and assessment of the heritage components and their distribution pattern supported the creation of a viable landscape, which can offer a contemporary design that suits contemporary public uses. The already built phases are fully used by the community. This successful use has been crucial to move ahead with following construction phases. The last phase is currently under implementation.



Figure 2. Flamenga Public Park; before (left) and after construction (right)

TAGUS LINEAR PARK, LISBON METROPOLITAN AREA

The *Tagus Linear Park* (TOPIARIS 2012), a riverside park along the Tagus' Estuary (15 ha), recently opened, resulting of the 1st place in an international competition (figura 3).

The site character is determined by a complex mixed use combining abandoned industrial areas, urban sprawl, military airport, railroad and infrastructures corridor, resulting in a derelict land, along the outstanding river valley landscape. For decades, local communities were deprived from this place where only a few struggle to use the dust paths and abandoned river banks for jogging and fishing. The design approach was based on principles of landscape architecture, namely the linear distribution of resources, existing potential in the territory, and respecting existing activities such as the fishermen. The project considered the metropolitan area character in which is located and the respect for existing humble and minimal uses for recreation.

Constrains became opportunities for a new landscape that merges into the surroundings. It leverages and respects in full the natural resources and

existing cultural testimonies and uses in the territory, including the protection and restoration of salt marsh ecosystems, the use of ancient fluvial transport infrastructure, the views towards the farmland and its drainage infrastructure, the proximity to Tagus landscape, as well as the presence of the fisherman that have maintained the human use of the site. Additionally, the design promoted the use of recycled materials and integrating energy production processes based on photovoltaic modules. The linear shape of the park allows to link between major urban centers in LMA. Along about 5 km of track for users enables recreation, contact with nature and acceptance of this diversified and contemporary metropolitan landscape character. The project was awarded by ARCHMARATHON 2015, winning the category of landscape and public spaces (Finessi, S., 2015; www.archmarathon.com/2015/category/landscape-and-public-spaces-winner).



Figure 3. Tagus Linear Park; before (left) and after construction (right)

Conclusion

Conclusions can be obtained from this study regarding each park in particular and concerning the overall significance of constraints in landscape design.

Santa Luzia Gardens in the core of Funchal (main city of Madeira Island), were designed and constructed on a derelict block of an abandoned industrial sugar mill. Obsolete and degraded industrial structures were used as means to create a contemporary garden capable to attract local communities and tourism visitors, through a design that celebrates Madeira's landscape.

Flamenga Public Park in Lisbon Metropolitan Area, was designed and constructed in phases, in a territory previously occupied by 18th century estate, and transformed through urban expansion. The degraded estate imbedded into urban sprawl tissue became an opportunity to design a park for public

enjoyment and recreation, taking advantage in its ancient components into sustainable landscape which fits contemporary public uses.

The Tagus Linear Park is a long public greenway throughout a metropolitan territory under unexpected processes of transformation. Complex and unpredictable land mosaic of recent LMA became an opportunity to create a more democratic territory for the overall community. The design of this greenway also revealed that awaken of ancient roots and strong memories can guide vision for possible cities future (Soromenho-Marques, 2014).

The reflection made on the three parks show that landscape constrains can contribute to a better landscape and support creative sustainable design recognised by the people, public entities and professional community. It also showed the significance of the landscape constrains to be used in different natural and cultural contexts, and its applicability in different design approaches for contemporary public parks in metropolitan landscapes.

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