

Proceedings of the Fábos Conference on Landscape and Greenway Planning

Volume 5

Number 2 *Landscapes and Greenways of Resilience*

Article 47

2016

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Recommended Citation

Fabris, Luca Maria Francesco and Granello, Guido (2016) "Green Belt of Brescia, Lombardy. From Resilience Strategy to Sustainable Planning in Practice.," *Proceedings of the Fábos Conference on Landscape and Greenway Planning*: Vol. 5 : No. 2 , Article 47.

Available at: <https://scholarworks.umass.edu/fabos/vol5/iss2/47>

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Green Belt of Brescia, Lombardy. From Resilience Strategy to Sustainable Planning in Practice.

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Introduction

The paper focuses on the methods on which it is built the planning strategy for the 'Parco delle Cave' (Park of Pits) in Brescia (Lombardy, Italy). This research, begun in 2010 thanks to the insights offered by a master's degree thesis, in February 2016 led to the approval of the variation to Plan of Government of the Territory of the City of Brescia. The authors, at the time, respectively, supervisor and author of the thesis 'Park of Pits, from protest to proposal' have gradually followed the different stages of approach to the proposed variant through a real multidisciplinary action. The argument that the study and promotion of the realities present in the Brescia area would give a sum of positive values such that they would automatically lead to a virtuous model for the creation of a territorial landscape system has proved partly correct and partly not. At the moment, this large area represents a great solution of continuity in the ecological green belt that surrounds Brescia, not allowing the basis for the correct development of a natural habitat hosting biodiversity and blocking the completion of town outskirts greenway. This research indicates in the 'Parco delle Cave' (Pits' Park) as the necessary ring to complete the Brescia green belt that includes the 'Parco delle Colline di Brescia' (Brescia Hills Park), the linear park of the River Mella, and a strong vegetal system along the South Brescia highway (proposed also).

Goals and Objectives

Brescia works to build new solutions to deliver the future a territory without fractures and reclaimed by the pollutant substances that its industrial heritage has left. PCBs, dioxins, cesium-137, heavy metals presence causes citizens to live some limitations in their daily routine, among them the advice not to open the windows during the summer season, not playing in the schools yards or eating fruits and vegetables only after having washed them 3 times. Nowadays employment opportunities in the field of environmental remediation are increasing. Some reclaiming experimentations are taking place, but the only way to ensure the develop of a common sustainable knowledge is to reclaim polluted and abandoned lands through new alliances though innovative strategies bringing together actors who, until now, have never done anything to solve the problems related to land misuse.

Local background

As said, the paper focuses on Brescia, an Italian town that lies on the Northern Po Valley linear system connecting Turin and Venice passing through Milan, is now facing the passage from important industrial center to a new post-industrial context, where environment and landscape strategies are great potentials for the local community future. Moreover, in 2012 UNESCO has declared Brescia 'Langobardic Town' increasing the tourist flow attracted by the magnificent historical site of Santa Giulia (Saint July), the beautiful landscape of Franciacorta Region vineyards and the hills and parks surrounding the Garda Lake. In 2015, the year of the Milan Expo '*Feeding the planet - energy for life*', over a million of individuals visited the Brescia, but the Expo impact was concentrated only in its center, where ancient just-renovated buildings are. By the way, Brescia, founded by the Romans in a strategic place to control the commerce coming from the Alpine mineral mines and the Botticino's white marble quarries, is still now the second largest town in Lombardy, being part of a complex infrastructural network that allows a large amount of economical exchanges.

During the last century, Brescia became rich thanks to the presence of great steel plants producing heavy product for the post-Second World War reconstruction of the Nation. Then, in the last 50 years, sand and gravel excavation industry became a new relevant economical sector for the town, due to the strong development of the Lombardy infrastructural system. For all these matters, the town now counts many derelict industrial areas and polluted brown fields to be reclaimed. The City of Brescia territory is now paying all the mistakes done in the recent past. The lack of environmental controls linked with a bad urban planning contributed to activate the urban sprawl transforming in the last 10 years an enormous amount of agricultural fields in residential and industrial settlements based only on car mobility.

The green network of Brescia

Only in 2002 B. Secchi, at that time responsible of the Brescia urban master plan preliminary studies, proposed a Green Network, a concept that M. Venturini, the planner who signed the last version of the city master plan, confirmed confirming the idea of Brescia as a "fractal" city (Matteotti – Tedeschi, 2003).



Figure 4. The green belt of Brescia (PGT of Brescia)

Dominated by the alternation of full and empty spaces, as said by Leonardo Benevolo in the '80s, Greater Brescia imposed to its surrounding territory its massive development though dispersion and densification, making real an approach devoted to a never-ending territorial consumption.

The first attempts to imagine an appropriate tool to curb this trend are datable in the last decades of the last century, when planners tried to imagine a coherent system to develop the town through a spatial continuity where a series of small-scale interventions could define altogether a large-scale scenario valid for all. A model of this type had a revolutionary force on the town growing, putting the basis for the construction of the Green Belt of Brescia. The first step was the Hills Park. This territorial preservation plan involved the City do Brescia with other municipalities adjacent the Lombard town to save the most important green lung present on the Northern hilly areas of Greater Brescia. The second step was the establishment of a green corridor between the River Mella and the Western ring road, called the Parco del Mella, which thanks to the continuity represented by water basin the fields still surrounding it allowed to create a cycle-pedestrian path connecting the lowlands with the Val Trompia Valley.

The green belt, even with its problems of preservation and conservation, is now set up to half considering the arc formed by the Hills Park and the axis of the Mella Park. These items are missing a key element that would result from the construction of two integrated green systems forming the connection of the two ecological networks constituted by the hills and the plains. This could be done connecting to the existing green belt to a strip shaped reforestation area

present between the Milan - Venice highway and the Southern ring road and declaring as Agricultural Park the fields still present south the highways. This new set of ecological systems could complete the whole town green embrace. Brescia could thus become one of the first examples of cities to boast an integrated green system composed of forests, river parks, agricultural parks and large infrastructure buffer zones.

The main difficulty lies in anthropic pressure that neighbouring communities have on the city limits due to the presence of large infrastructures and major development projects such as the new highway Brescia-Bergamo-Milan and the new high-speed railway that help to dissect the territory in bands parallel to the hills. In addition to this external pressure are now coming the proposals for urban densification around stations of the new underground of Brescia, which opened in March 2013. All of these factors combined with the lack of a strategic plan mean it becomes more and more necessary a strong discontinuity with the past, finding new elements able to regenerate the Green Network of Brescia.

This element could be represented by the *Parco delle Cave* (Park of Pits) that, even if is only a link between the Green Belt of Brescia and the Provincial Ecological Network, should become the strategic hub on which to build and experiment with the future planning policies for Brescia and its territory. The last PGT recognize the importance of the area after the project '*Segni sull'acqua*' (website 1).

The Park of Pits

The *Parco delle Cave* (Park of Pits) has been defined by the Brescia Urban Master Plan in 2011 and covers 450 hectares of its communal territory. Taking count of the territorial continuity and the presence of others pits in some neighbouring Commons, the surface of the park could include also part of the territories of the Commons of Borgosatollo, Castenedolo, Rezzato, and Botticino reaching so the size of approximately 600 hectares. The size of the park, which is about 4 times the area of the historical centre of Brescia is already in itself a challenge made even more difficult by the heterogeneity of land management and activities present in the area. Moreover also the presence of numerous contaminated sites not controlled landfills and dangerous substances treatment plants whose impact is still unknown has to be counted.

After 50 years of sand and gravel excavations what remains in inheritance are 9 major lakes in size between 10 and 20 hectares each and other lakes and ponds of smaller size. These water basins consist of ground water at a constant temperature between 10°C and 12°C situated about 10 m below the ground

level thus forming veritable wildlife sanctuaries, where live several species of resident and migratory birds. Data from recent sightings talk about 39 different species of which 30 are breeding and therefore closely related to the habitat of these former quarries. Among these was found the presence of 9 species with conservation priorities of which the European Birds Directive 09/147 protects 3. Because of the division of property typical of the quarry system, the basins are separated one from each other by roads and watercourses. Exploitation evinces the landscape but it has respected the original agricultural structure of this territory and for these reasons, the pits have regular shapes. The liquid component is around a quarter of the total of 450 to 600 hectares of the park surface, while the other three quarters are made up of farmland, roads and buffer zones of infrastructure and industries.

Common construction of the program

In 2011 the City of Brescia fined for illegal excavation for a total of € 5 millions some of the quarries owners, that subsequently offered to divest to the Municipality the quarries with the prior commitment to restore the banks and do the work necessary to make places suitable for a public use. The area in question is approximately 55 hectares, equal to about one-tenth of the areas of the Pits' Park, and consists of lakes, islands, shores, meadows, farmland and wooded areas. The heterogeneity of these environments makes it a real open-air laboratory in which to experiment a new participatory approach that could become an example for the development of positive policies.

The Park of Pits and its lakes can host temporary and nomad functions as little floating buildings or light foundations buildings like camps, hostels for young or elderly people, educational structures, and innovative energy production structures integrated in a natural and newly agricultural landscape. To make stronger the research proposal, the project take count of the suggestions and the desiderata of the stakeholders having activated a wide participation process including several associations working of the field, suggesting as economical engine for the new Park of Pits a public-private management supporting a common sustainable vision for Brescia and its territory [1].

The participatory process '*Segni sull'acqua*' (Signs on water) held in 2014-2015 at the Brescia Urban Center put a milestone in the planning process of the Park of the Pits. Through workshops, trips, discussions, meetings and field-trips the citizens could imagine how the Park could be. The challenge of the process was to divide the desiderata from the real propositions to give both a correct answer. At the end the main misstep, if we can call it in this way, was the lack of innovation and propositions by the economical actors. In crises

time, asking only natural and recreational function could be not enough to preserve and promote the green corridor because at the end of the crises time, land consumption could eat all the areas without a vocation.

In 2015, after this participatory process, the Brescia Administration decided to not create a real new PLIS but to enlarge the borders of the previous ones, creating a green system. The reconfigured PLIS, unifying the Park of the Hills and the Park of Pits, is a challenge because of the mixed vocation of the two territories. One is a hilled landscape, natural but artificialized, the other is an artificial one hosting natural enclaves. If well managed the new PLIS could be an example for the regional policy that always consider valleys and hills like two different systems. [2].

Method

Involving the stakeholders, the participatory process “Signs on water” was an experimental program, which made use of a series of traditional and tentative methodologies. The process was divided into three main phases: *a preliminary analysis* (past documentation collection; construction of a shared multidisciplinary analysis and of a ‘*desiderata*’ notebook; a technical comparison with the municipal technical departments to check the actual trends of large area projects); *a brainstorming phase* (using the Easy Awareness Scenario Workshop method; critical issues and of environmental resources analysis, weighted according to indexes based on landscapes, health, water, air, biodiversity, social relations, and land use); design workshops for the formation of the perimeter of the new park and the definition of routes and access systems (information seminars, inspections on areas with help of experts and professionals, creation of guidelines about the vocation of the park areas, and a brief for the recovery of the entire area of the quarries); *a final process verification and re-modulation phase* done according to the territorial government instruments and the necessities of an executive project. During all these phases an interdepartmental technical committee has been opened, and environmental impact assessment analysis were made by the Commission of Brescia Construction and landscape, taking count also of the feedback of the private stakeholders. The results of this work were presented by the involved associations in the process at neighbourhoods’ public meetings and in an exhibition that took place at the Urban Center in Brescia (website 2).

From project design to urban planning normative

Lombardy Law 86/1983 delegates to municipalities the establishment of the PLIS (*Parco Locale di Interesse Sovracomunale* it can be translated as ‘Local Park Interesting More Cities’). Instituting the PLIS, the municipalities have the

option to perform an amount of necessary operations to understand how their territories are and which is the trend of practice on their landscape. This recognition is a preparatory issue due for the Province acceptance. In order to obtain satisfactory results, the municipalities have to recognize what are the strengths of the project and what are its critical issues. Through multidisciplinary studies is possible to observe the different components of the landscape such as the state of natural resources, the biodiversity levels related to each habitat, the level of fragmentation of green, the presence of landscape producers and their operating condition, the risk factor compared to the loss of natural soil and the anthropogenic pressure. To analyse all these values it's important municipalities demand to third-party entities the construction of a scenario. In this way the results could be in line with European standards and provide an independence level to the actors. So, it will be essential to involve in the Park's development recognized national institutions as observers on the landscape, control agencies of environmental quality and intermediate bodies as NGO associations. This co-participation helps to create links and improves the good management and a sustainable development of the territory. In this model associations and committees guarantee the direct control by the citizen at all steps, improving the conscience in the people and creating a common knowledge that allows speaking to the stakeholders into a common language. All this obtains some concrete goals through an organic process involving ideas that define a set of sustainable objectives [3]. Different policies that would lead to the result of the creation of a large green system made by greenway connections and the regional ecological network using the PLIS as the tools to driving and testing the opportunities of the territory without creating prescriptive policies that limit the development. The process that results is continuous in time and characterized by the continuous creation of new goals and new moments to build up the local identity, sharing it between different actors involved in landscape.

Conclusion

This research defines as common heritage for the Brescia inhabitants also the transformations occurred to the last agricultural fields such as pits and quarries, now present widely in its territory. These locations can be recovered as new public spaces for the Third millennium, creating new habitats and biodiversity promoting a new challenge for the future. To achieve this goal, this study proves that Brescia's citizens have to become not only spectators of the territory transformation, but have to learn interacting through interdisciplinary processes on the way to create new scenarios in which economy and production act together with the landscape disciplines to create, as suggested, a sustainable greenway system based upon this post-industrial

heritage (Fabris, Granello, 2015). For example, the Park of Pits' participated project aims to preserve the 're-naturalized' site through the reuse of the excavation machineries left in the area as light architectural infrastructures connected to the introduction of light aquatic sports and bird-watching activities. This is a possible scenario for this kind of new 'accepted' re-naturalized landscape, perfectly hosted in the system of the regional Alps and Pre-Alps Park, whose reuse can become a model for other similar cases where the actions of industry left wounds into Nature.

Notes

[1] This paper takes count also of the results of the Participated Workshops Series led in 2014 by the City of Brescia's Urban Center with Imbrò and Staro Associates (architects Cristina Imbrò and Stefano Staro, assisted by arch. Guido Granello) which involved also the City Planning Department, 32 Brescia's institutions and associations, and 242 individuals (45 participants per meeting in average).

[2] These parks together with other 24 regional parks, 64 natural reserves and 31 Natural Monuments help to define a set of actions that make up the Lombardy Regional Ecological Network mixing other tools such green systems and Plans for the Improvement of Forests (PIF). If Lombardy is experiencing best practices and developing an integrated system of green areas, it remains one of the Italian regions most suffering the problem of land and agricultural fields consumption, as territory is used to build new settlements. The data provided in 2011 by the National Observatory on the Soil's Consumption tell Brescia, with an index of 2.3 ha/day of land consumption is above the average data for the region, which stops at about 1 ha/day.

[3] One of these tools is, for example, the research conducted on a sample of households that calculated in 4.39 ha/inhabitant the ecological footprint of the Brescia citizens. The figure in itself is lower than in other cities in other Countries, but becomes remarkable when compared with the fact that the average figure for each Italian is about 1.0 ha/inhabitant.

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