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WORKSHOP 3

Greece - Landscape education: the case study of Marathon – A brief description of a complex project

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The landscape restoration in Schinias Marathon has been a project with multiple aesthetic, ecological, cultural, social, political, economic and technological dimensions. The author of this paper has followed the whole process, through his active involvement in the design and implementation of technical works in Schinias (1997-2002), his presidency of Schinias Marathon National Park Management Board (2003-2009), and also the educational activities relative to this case-study until today.

The coastal site of Schinias in the Marathon plain, 45 km north-east of Athens, has particular interest as a landscape of ecological value and outstanding scenery. It has a land area of 9 sq km, with a variety of natural habitats: freshwater spring, coastal wetland, sand dunes covered by a *Pinus pinea* and *Pinus halepensis* forest and a pristine rocky peninsula covered by Mediterranean maquis; the forest covers an area of about 1.20 sq km on a sandy strip about 400 m wide; the wetland covers an area of about 7 sq km. More than 320 species of flora and a significant diversity of fauna species, including threatened resident and migrating birds, freshwater fish, amphibians and reptiles, live in the land biotope. Inflow of freshwater from the Makaria spring and stagnation of fresh and brackish water in the wetland for many months of the year are essential factors for ecological habitat formation and function, for coastal forest persistence and regeneration, and for land and aquatic wildlife diversity. The cultural landscape is highly valuable, too; in the area of Marathon, there are famous archaeological sites while it maintains characteristics of the classic Attica coastal landscape.

Multiple and persistent anthropogenic pressures have for decades been exerted on the wider area. Scattered second-home developments on the adjacent hills, road network expansion and agricultural land changes have had a negative impact on the everyday landscape. The wetland of Schinias has been degraded since the 1920s, when the water of the spring was diverted to the sea; the drainage project has never been completed; only part of the wetland has been cultivated, while the rest remained a semi-dried marsh. About 10% of water inflow remained available for the wetland, and therefore the dynamic balance between surface and underground salt, brackish and fresh water has been heavily modified. Environmental pressures, such as military installations, a small civil airport in the wetland, noise, solid waste disposal, as well as uncontrolled hunting, fishing, grazing, motocross, car parking, camping and housing have impacted the land for decades, resulting in considerable landscape degradation: habitat fragmentation, pollution, limited regeneration of *Pinus pinea*, decrease of bird populations, etc.

In 1953, four years after the end of the Greek Civil War, a small American Navy communications base was established on the wetland. Its location, not far from the centre of the Aegean Sea, was of a high strategic value; the Cold War had just begun and the optimisation of military communications was important for the security of the American fleet in the Mediterranean Sea. Operative until 1990, the base occupied an area of 0.32 sq km, with a small power plant and warehouses. A network of wooden antenna extended all over the wetland, serving military communications operations. The electrical power plant, with four big diesel machines, six transformers, electrical tables and large fuel storage containers, formed an industrial landscape. In 1990, the installations became the property of the Greek State and they remained unused. In 2001, some parts of the transformers were stolen and the perpetrators emptied the toxic liquid that served as insulator onto the ground; about 450 sq m of the wetland soil was heavily polluted by PCBs. Initially, the authorities simply removed the most polluted soil and sent it for incineration as toxic waste in a specialised facility. The appropriate complete dismantling of the old industrial and military facilities, as well as a proper environmental remediation of the natural ground they occupied, was considered too costly a project.

Protecting and upgrading this site seemed impossible in the middle of the 1990s, because of the obstacles related to adverse local interests, as well as the high cost; actions such as restoring the flow of water to the wetland had a low likelihood of success. Rehabilitation of this degraded landscape would not be feasible without a powerful political boost. A major event, such as the Olympic Games in 2004, and the related technical works, was used as a trigger to achieve these environmental goals. Nevertheless, in the context of the country's preparation for the Games, socioeconomic conditions became favourable for ambitious environmental design. The creation of a unique ecological, cultural and athletic centre in Schinias seemed a fascinating idea; the construction of an Olympic Rowing Centre that would upgrade environmental conditions was planned for the wetland; the founding of Schinias Marathon National Park was agreed, aimed at the control and reduction of illegal and environmentally harmful activities that constituted the enduring status quo.

A careful environmental impact assessment showed that it was possible for the Rowing Centre project not to destroy but, on the contrary, to upgrade ecological functions. The small airport was removed and the Rowing Centre was constructed under strict environmental terms. The location and design principles adopted for this facility, which comprises two interconnected semi-natural lakes, aimed to restore ecosystem quality. Water that was diverted from the Makaria spring to the sea has now been redirected to the new lakes; their overflow has been driven, through spillways, to the wetland. The restoration of the water's natural flow caused essentially a lifting of the drainage that had been begun in 1923; the creation of new lakes increased the available freshwater water quantity and quality (by

regulating its salinity).

Nevertheless, rehabilitation of the ecosystem would be dubious without upgrading surface and ground water quality by limiting potential toxicity even at negligible levels. Sampling and chemical analyses of polluted soil were conducted in 2002. Pollution by PCBs was found in the soil of the locations from where the transformers had been removed. One month before the official opening of the Olympic Games, all military constructions and facilities were demolished and the potentially dangerous materials were removed. The works restarted after the Games and for several months a programme of borehole drillings for sampling and chemical analyses was carried out in the wetland. PCBs, as well as some other pollutants, were detected and the results also indicated some chronic pollution, probably related to the former industrial operations. Following these analyses, a considerable volume of polluted soil, concrete and asphalt was removed and treated as toxic material. The remediation operation reached a cost of about 1.4 million Euros. The whole area where the military installations had been established was covered by natural soil and natural regeneration of Mediterranean and aquatic vegetation has appeared since January 2005. Chemical analysis of soil and water samples did not indicate any significant toxic pollution in the following years.

By 2009, significant improvement of the natural landscape had been achieved. The increase of the available quantity of freshwater in the wetland provides better hydrological conditions of groundwater; future improvement of the forest's natural regeneration can be expected. The natural annual fluctuation of water in the wetland constitutes an essential restoration of ecosystem function and increases the attractiveness of the area for birds. An extension of freshwater marshes and vegetation is observed with positive effects for the condition of the fauna. The decrease of disturbing activities and the environmental remediation have strengthened the naturalness of the landscape. As a matter of fact, the current environmental condition is considered the best in the last 80 years. The freshwater fish fauna has increased: at least five species have been observed, among them the endemic *Pelasgus marathonicus*, whose presence in the water of the Rowing Centre has been ascertained. Bird diversity has increased spectacularly: 117 species were recorded in Schinias before 1997; 243 species have recently been recorded. This number includes at least 52 bird species that regularly reproduce in the area.

The site of Schinias is valuable for environmental education and outdoor recreation, but visitors are not numerous, apart from during the summer months; if managed properly, and without significant cost, it could become an attractive place for more than four million residents of the Attica region; nature lovers would find this a congenial space for gentle activities such as hiking, cycling, swimming, bird watching and environmental education. Schinias is very attractive for families with small children, and also for disabled people, because the mild inclines of the ground facilitate movement on foot, by bike or wheelchair. The application of strict rules in the framework of a National Park should promote environmental awareness activities.

Paradoxically, ecological organisations and the local community have converged in an unfavourable attitude towards this ambitious environmental project. In 1999, the question whether a complex technical work could be beneficial to a valuable landscape received firm negative responses from many Greek and international NGOs; they were strongly opposed to what they considered artificial constructions in a protected natural site; they refused to consider possible positive outcomes resulting from an environmentally-friendly technical project. The subject was a dominant one in the Greek mass media for a long time and took on significant international proportions. Finally, the government decided that fears about degradation of the natural landscape, or its archaeological value, were

unfounded and the initial plans were applied.

However, conservation of the wetland and rehabilitation of its water balance, as well as implementation of measures that should restrict disturbing human pressures, met opposition by a large part of the local community and this undermined protection activities of the National Park. Many inhabitants protested because they disagreed with the rules; they were annoyed by the restoration of the marsh, the control of car movement and parking in the Park, the limitation of building etc. The local government adopted a neutral or negative attitude, sympathising with the dominant desires of some residents and interest groups, such as farmers, shepherds, hunters and land speculators who were opposed to any conservation measure. In 2004, local officials expressed interest in the exploitation of the area based on a luxurious tourism development. The dominant negative attitudes did not change, despite multiple efforts to develop environmental awareness through public hearings, dialogue, local educational initiatives etc. processes which are both arduous and time-consuming.

The effort for landscape conservation was less effective due to the neutral apathy of the larger part of society. Moreover, there was a lack of active social support by the numerous potential users of the National Park. Expectations that a higher environmental concern could follow the special event of the Olympic Games have not been confirmed; the traditional social mentality naturally remained. The local community needed a long time in order to, hopefully, adapt to the landscape management measures. Indifference increased after the Games, so that the very existence of the National Park began to be discredited in the minds of some people. Even the socially-attractive perspective of a Park with special possibilities for disabled persons, or the costly environmental remediation of the military installations, did not gain significant approval from the local community. However, after land values fell due to the economic crisis that followed, protests against the National Park slowly decreased. Meanwhile, significant support from the EU, together with positive efforts of the staff of the National Park and the visible improvement of environmental conditions have helped maintain the legal protection status, but without the strict application of all protection measures.

The technical part of the integrated project in Schinias has proved to be generally successful for the upgrading of the natural landscape. There have been irreversible positive changes that offer a significant prospect for long-term landscape conservation, with the expectation that, while the landscape is being maintained in good condition by the solid and persistent technical works, society will, gradually, acquire higher environmental concern.

Nevertheless, the whole process of landscape upgrading in Schinias is very slow; an interesting example refers to the seven illegal taverns and bars that belonged to a building co-operative and the Marathon Municipality; these facilities functioned at the edge of the forest and on the beach; they were powered by liquid hydrocarbon engines that presented a continuous risk of provoking forest fires; they also illegally drained waste water into the sea. These taverns and bars should have been demolished by the public authorities, according to judicial decisions of 2004 that remained unexecuted for many years. Finally, following continuous pressure from the EU, these illegal buildings have recently been removed.

Landscape education questions

The site of Schinias Marathon, as an outstanding landscape with natural and cultural features, is an ideal place for environmental education; it has been visited by many primary and secondary school classes of Attica over the last 15 years; it has been the subject of a significant number of graduate and

post graduate university theses; if the National Park became an attractive area for city dwellers, it would also be a very advantageous place for multiple continuing education.

Many experts, public authorities and organisations dealing with landscape management could take useful lessons from this innovative and complex human intervention in a valuable site. Several questions about success or failure of landscape projects arise from this both positive and negative experience:

- Can a natural landscape be upgraded by artificial intervention and technical works?
- Should measures that restrict disturbing human activities be implemented without the consensus of local communities?
- What should be the role of public authorities if local communities give higher priority to expected short-term economic benefits than to long-term environmental objectives?
- Should local governments act according to expert opinions on landscape management or should they accept the protests of local inhabitants or the desires of interest groups?
- Should decisions on landscape management follow some intransigent ecological positions of NGOs, even when these positions may undermine the better solutions proposed by experts?

Literature

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