ABSTRACT

Living Devices Lab is a communication project that explores the fragility of natural systems, focusing the emergence of the loss of biodiversity in the riparian landscape of the Po River Basin.
I | Did we really change our vision of nature and human life?

The enormous change of vision and perception about the sense and the meaning of nature and human life of the past century were determinate primarily by the vision of the hearth by the moon and by the possibility of tracing the DNA map. From that time, in spite of a traditional vision based on the opposition Human/Nature, they may both be conceived as vulnerable molecular systems that co-habit a small and limited living planet.

In the industrial developed countries common ways of communicating, imagining, representing and planning spatial relationships between nature (wildlife, animal and plants, woodlands and mountain, rivers, lake and sea, earth, wind and fire) and territories we inhabit seem to continue following a traditional vision whose consequences are exploitation or defensive approaches.

The environmental crisis imposes the necessity of new strategies in alliance and collaboration with nature. To reach this goal we must reflect about our conception of nature and about the effective reality of contemporary natural systems.

In the emergent discussion about territories, cities, architecture and their mutual relation, nature can’t be still simplified by the generalist term “Green”: nature is complex, differentiate, specific and its potential of self-reorganization represents a sort of “personal identity” that we should try to read and increase.

The many alarming issues posed by the fragility of natural systems require alternative perspectives and different understandings.

- What about nature in degraded and artificial contexts?
- What about its relationships with environment?
- Is still nature a present idea in our everyday life?

2 | Exploring fragility of natural dimension in the Po River Basin

The project we present it is mainly a communication project, a reflection around the loss of wilderness and biodiversity related to water landscapes in the main hydrological resource in Italy, the Po River Basin area.

It’s a metaphorical action, a way to re-think the role of aquatic and riparian vegetation in the complexity of the ecology of water ecosystems; a starting point to imagine a river management that should reconsider nature and include wilderness.

The project was born when a movie director proposed us to contribute as landscapes architects in a documentary about the Po River. We decided to try to communicate the link between disappearance of water landscapes, loss of biodiversity and environment deterioration involving ourselves in two performing and metaphorical actions.

During our survey of the area we found a precious scientific support for our project in the work undertaken by the Ecology Department of the University of Pavia and by the Lombardy Seed Bank, member of the Kew’s Millennium Seed Bank Partnership. The aim of these institutions is to preserve in situ and ex situ regional protected species and/or appropriate species for ecological restorations and regeneration interventions.

The seeds stored in the Lombardy Seed Bank will act as a safety reserve available for future activities aimed at strengthening or reintroducing fast disappearing species that might become locally extinct.

Seeds and plants turned to assume a central role in the project as memories of negated landscapes and as genetic assets of a lost richness. Excluding all determinist approach claming integrities or purities of natural landscapes (as in fascist Germany in the 1930s and 1940s) our intent is to enter in landscape dialectic to take care of and to protect endangered natural fragments.

Due to unaware behaviours in human territorial transformations in Italy, from the Middle Ages 90% of wetlands have fallen, while since 1950 we lost under asphalt and concrete 3 million hectares of land rich of biodiversity, as documented in a WWF’s dossier in 2008.

Planners, architects and designers should be involved in taking care of fundamental biological processes in the complex dynamics of natural systems that have no longer adequate spaces in our urbanized territories.

To reflect on biodiversity requires constants steps from microscopic to geographic scale and points up the importance of the invisible work based on genetic memory that all living organism perform to reorganize and preserve global natural systems.

As N.M. Lister writes: “Biodiversity can be considered analogous to a library information, some recording long ago, and some only now be written, that provides not only a wide range of possible pathways for the future development of life but also learned repertory for responding to environmental change and disturbance".

We looked to communicate the importance of potential ability of ecosystems to recover, reorganize and adapt in critical situations to their survival, and we tried to focus that to preserve this ability depends from our decisions about territorial uses and from our ability to understand and interact with nature.

To bring these reflections on communication about territory is important because “nature in the twenty-first century will be a nature that we make; the question is the degree to which this molding will be intentional or unintentional, desirable or undesirable”, as the biologist D.B. Botkin writes.
3 | Living Devices Lab: perturbing a landscape to reinterpret it

Our challenge in the documentary was to try to reveal an invisible and wild landscape, a latent dimension that we can actually perceive only through the experience of isolated and fragile fragments of nature. A long anthropization process began 5000 years ago, gradually transformed the Po Valley, coinciding with the Po River Basin, in a large agricultural and then agricultural-industrialized machine inexorably consuming grounds and landscapes and deeply eroding complex natural systems.

introduction and cultivation of disappearing vegetal species, as paradoxically foreign viruses trying to re-colonize a denaturalized territory.

We named these small structures LIVING DEVICES, designed to be experienced by people and inhabited by a precious biological component: seeds and plants genetically studied and selected by the Lombardy Seed Bank to grant their autochthony.

If the contemporary emergence is to regenerate degraded environment perhaps the prospect of cultivating natural landscapes should acquire a strong design value; inverting a consolidated tradition we should begin to protect, create and cultivate natural endangered landscapes, somehow reinventing them.

William Morris wrote “architecture encompasses the entire environment of human life; we can not escape to architecture, as long as we are part of civilization, because it represents all the changes and alterations made on the land surface, with a view of human needs, except in the pure desert”.

Our question is: to seed, cultivate and reinvent natural landscapes is it an act that we can compare with the production of architecture which primary functions should be to create relevant spaces for life?

The first performative action was located at Ariano Polesine, closed to the river delta, where an ancient monumental 500 years old oak stands isolated on the riverbank in front of the agricultural desert. By relating the oak to the enormous extension of the surrounding landscape we can have a trenchant idea about the percentage of residual forest’s areas proportionately with the extensions of the entire Po Valley. We designed the Flying Seeds Sieve, a big kite of 4.0 m diameter to metaphorically sow the riparian landscapes to reintroduce causality and wilderness entrusting seeds to the wind.

The kite is composed by a flying circular tetrahedral structure inspired to a Graham Bell’s kite project and by a net to shape a sieve containing suspended pods, as a flying forest pattern which dispersed hygrophilous planitial forest seeds. The pattern reproduced in proportion the tree species that compose the planitial forest substantially represented by Quercus robur, Fraxinus oxycarpa, Ulmus minor, Carpinus betulus, Prunus avium, Euonymus europaeus, Acer campestre, Crataegus monogyna, Populus alba, Populus tremula,
Alnus glutinosa, Salix alba, Salix purpurea.
As most of the seeds will probably not grow due to the low receptivity of a ground completely transformed and controlled by human activity, we also spread common herbaceous species with a messenger, a secondary small kite that runs along the rope of the Flying Seeds Sieve.

Through this sowing entrusted to the wind we can test and explore environment receptivity and detect potential areas neglected by human activity traced by the colours of flowers of herbaceous species that will probably grow. On that traces we like to envision the invisible landscape of a future hygrophilous planitial forest.

Despite the minimalism and the evocative character of the intervention, what we wanted to point out were the invisible processes that contribute to configure natural environments: seeds, wind, earth combined in mutual relations that allow life to germinate.

5 | A floating landscape: what if spreading constructed natural ancient spaces?

The second action was located at “Lanca dei Francesi” closed to the city of Parma, a disused sand quarry that is actually undergoing an experimental re-naturalization pilot project of the Emilia-Romagna Region.

It’s aim has been oriented to a prevalent concrete solution trying to introduce and cultivate rare and endangered species in an artificially modified riparian space.

Sand quarries are extreme sites, common river areas along the Po River heavily altered by mining, where waters can reach 20 meters depth, tidal excursions may reach 8 meter height and border sloops are to steep to let plants grow. Despite their strong artificial origin they represent a potential suitable context to recreate disappeared wetlands ecosystems.

Paradoxically, the proper functioning of nature is becoming a problem to be solved by artificial means; the devices we designed and built consist in several floating islands made with a special recycled plastic material realizing a porous support where plant roots can clasp and grow as through an earth turf.

We called them Seeds Spreading Islands. The construction process of the islands turned to be an important part in the documentary narrative to express how nowadays nature needs the support of artifice and technology to be preserved.

The main goal of this action has been the
reintroduction of some rare and/or genetically verified local species like Sagittaria sagittifolia and, for the first time in Italy after 50 years from its disappearance, the reintroduction of the Marsilea quadrifolia. Despite the massive eradication due to be considered a weed in rice plantations the spores of this plant may survive even hundreds years under the mud, therefore it has been found and cultivated by the Lombardy Seeds Bank. This action has been designed to imagine a change of scenery, a gradual re-colonization of degraded and contaminated environments by a selected vegetation able not only to enrich biodiversity but also to absorb and retain nutrients and pollutant increasing water quality. The change is visually expressed by the aesthetic use of species with different range of flowering colours: Leucojum aestivum, Iris pseudacorus, Lythrum salicaria, Butomus umbellatus, Nuphar lutea and Ninphaea alba.

We’d like to envision the floating islands as occasions experienced by people in a mix of different activities to link the idea of public space and social participation to environmental awareness and re-naturalization processes beyond the idea of protected areas and natural reserves. This little fragments of land entrusted to the stream could be read as early grafts of embryonic landscapes.

6 | Conclusions

The project presented is still a work in progress, it will be necessary to constantly evaluate and monitor the real effect produced on the surroundings. To enter in landscape dialectic is to enter in a dimension where all living things are strongly interrelated and where changes may be sudden and unexpected. Each added or subtracted items could perturb the complex net of alliance and processes of endangered ecosystems, especially if they are extremely fragile like water landscapes. In this regard, we wonder if riparian and water landscapes have been ever understood and managed in relation to the complex geological and biological dynamics of the water cycle in Po floodplain valley.

We’d like to think that our little performing actions may represent a premise to start a debate on a possible re-naturalization of the Po River and its tributaries, a contribution to transform environmental imaginary and consequently the ways to conceive the territorial transformations. Accepting the “eco-imaginative” proposal of James Corner, trying to conceive an ecology that, as he wrote, “inform and embrace those poetic activities that create meaningful relationships between people, place and the earth” we trust in new explorations that link biological, territorial and cultural life; “culture evolves through metaphor and the release of more edifying relationships between things”, in the same way evolve
territories we inhabit and transform. What about if the Po River could become a green lung, an ecological infrastructure for the Po Valley, one of the most polluted region in Europe?

6.1 | Expansion of hygrophilous planitial forest, Authors: Living Devices Lab

6.2 | Expansion of wetlands, Authors: Living Devices Lab
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