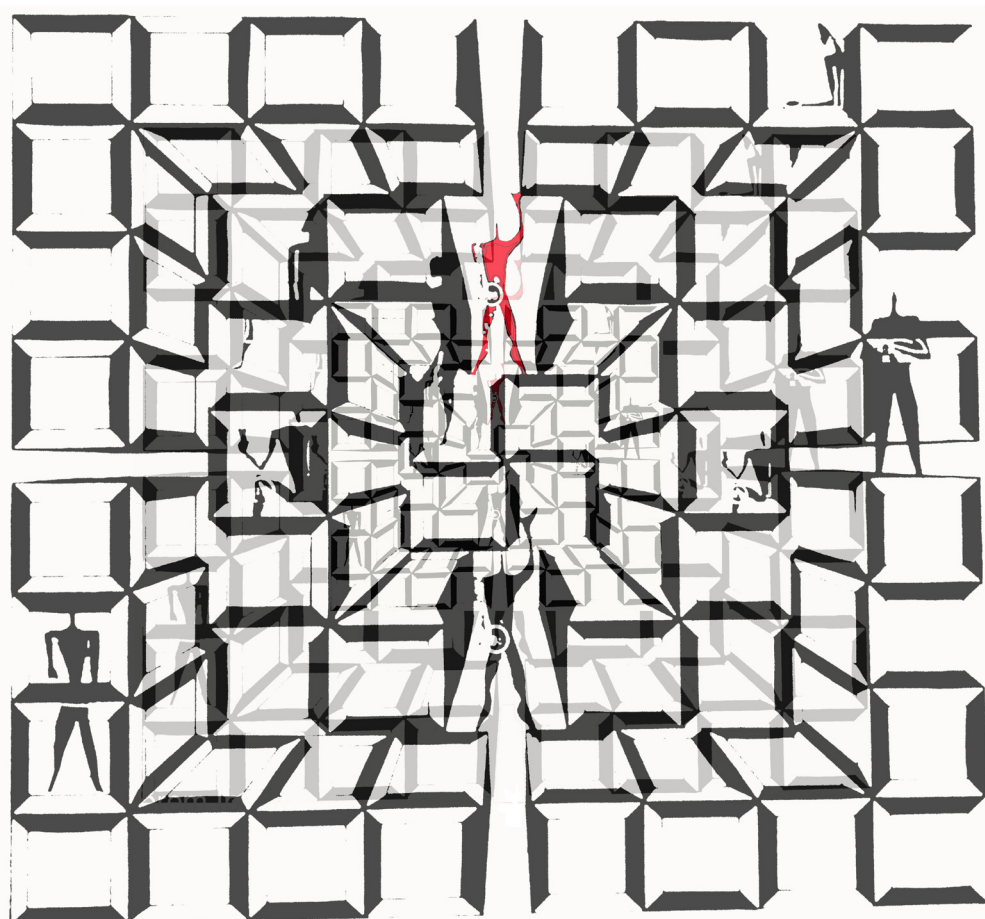


De_Sign Environment Landscape City_2020

Atti

a cura di Giulia Pellegrini



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De_Sign Environment Landscape City/Di_Segnare Ambiente Paesaggio Città

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The 'Green' as Element of Regional Identity

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Abstract

A green area, a public park should always represent the *genius loci* of the locality in which they are located, in many cases they represented the element of change of a place until it became its most important, if not the protagonist, the development engine of that site.

This is valid not only for public spaces built in the past, but also in the present, among the ancient examples the transformation of historic walls into important public avenues or coastal walks with palm and other exotic trees, in the contemporary the High Line is the pivot of a new cool neighborhood in New York.

In this study we want to demonstrate the importance of using autochthonous 'plants' in creating a green area. Based on numerous scientific studies, invasive exotic plants must not be introduced, but rather native ones for an ecologically sustainable project of an open and urban public space. Through examples of successful applications and not, the in-depth analysis will be mainly on herbaceous plants starting from Oudolf theory on the chromatic, formal and dimensional alternation of them. The intent is to provide guidelines, through the two case studies in New York and Rotterdam, for a sustainable architectural composition of herbaceous plants, with the use of native species easily available in situ.

Abstract

Un'area verde, un parco pubblico dovrebbero sempre rappresentare il *genius loci* della località in cui si trovano, in molti casi hanno rappresentato l'elemento di cambiamento di un luogo fino a diventare la caratteristica più importante, se non addirittura il protagonista, il motore di sviluppo di quel sito. Questo è valido non solo per spazi pubblici realizzati nel passato, ma anche nel presente, tra gli esempi antichi la trasformazione di antiche mura in importanti viali pubblici o passeggiate rivierasche con palme ed altri alberi esotici, nel contemporaneo la High Line cardine di un nuovo quartiere cool di New York.

In questo studio si vuole dimostrare l'importanza dell'utilizzo di 'piante' autoctone nella realizzazione di un'area verde; per un progetto ecologicamente sostenibile di uno spazio aperto pubblico urbano non si devono introdurre piante esotiche invasive, ma soprattutto native, come dimostrato da numerosi studi scientifici.

Attraverso esempi di applicazioni riuscite e non, l'approfondimento è soprattutto sulle piante erbacee a partire dalla teoria di Oudolf sulla alternanza cromatica, formale e dimensionale di esse. L'intento è quello di fornire delle linee guida, attraverso i due casi studio di New York e di Rotterdam, per una composizione architettonica sostenibile delle piante erbacee, con l'utilizzo di specie autoctone facilmente reperibili in sito.

Introduction

A green area, a public park should always represent the genius loci of the locality in which they are located, in many cases they represented the element of change of a place until it became its most important, if not the protagonist, the development engine of that site.

This is valid not only for public spaces built in the past, but also in the present, among the ancient examples the transformation of historic walls into important public avenues or coastal walks with palm and other exotic trees, in the contemporary the High Line is the pivot of a new cool neighborhood in New York.

Very often the plants used have given the character of the new public space, to the point that in many cases the getting sick or even the loss of a plant species has caused the transformation, up to the loss of identity of that landscape (the historic walls of Lucca, the Riviera delle Palme in western Liguria...).



Fig. 1 Villa Agnelli, Levanto, The twentieth-century landscape of the palm trees (image: M. Manfroni)

Methodology

Character of a place

Identity of a public open space: design and composition of artificial and natural elements

"If it was up to me to design the Louis XV square where it is, I would have been careful not to cut down the forest.

I would have liked the dark depth between the columns of a large peristyle to be glimpsed.

Our architects have no imagination, they don't know what accessory ideas are awakened by the environment and surrounding objects" Encyclopédie, D, Diderot

The phrase of the Encyclopédie perfectly focuses on the importance of green in a public open space, not surprisingly at the gates of the Enlightenment in France Jean-Baptiste Colbert creates the Boulevards, the first Parisian tree-lined avenues, characterized by axes tending to infinite prostheses from the city towards the countryside and organized, both for the population's walk and for the transit of carriages. Shortly before in England in 1637 in Hyde Park, one of the royal London estates, the public was allowed to enter the park and in 1665 a part of the population took refuge there to escape contact with the plague epidemic.

The first green public spaces were born in this way, from which all the nineteenth-century parks connected with industrial development derive. The goal is to allow the population to enjoy themselves in the open air when they move from the countryside to the city, from peasant life to working life with completely different rhythms and hygienic-sanitary conditions. The transformation of the ways of life of new citizens, the birth of free time, the need to carry out actions in the open air, walking, playing sports ... is strictly connected to this epochal change.

The public park until that moment did not exist and in its realization, it is inspired in many cases by the English landscape garden. It intervenes in the transformation of pre-existing places that are no longer useful, such as disused historical walls such as the Ring of Vienna, the Acquasola park in Genoa or quarry areas in abandoned to be recovered, such as the park of Buttes-Chaumont in Paris on an ex chalk quarry.

The character of these green public spaces today appears to us as a classic element, but in the moment of their realization it represented an innovation, a real revolution. Its design recalls that of the so-called English park and the plants used are the same as the landscape and / or fashionable parks at that time. Today the ways of experiencing the city have changed, as well as the boundaries between public and private spaces, between work and leisure. In order to function, an open public place must support this trend, it works if it is possible to work, study, have fun inside.... The contemporary open space has a new identity, which is the result of a renewed composition both in the artificial part and in the natural part. The architectural design characterizes the park or square often through landmarks or furnishings, floors, colors, a light motif that is repeated and that characterizes that particular space. For example Superkilen created in 2012 in Copenhagen from the collaboration between the landscape architects Topotek1 and the artists Superflex has managed to restore harmony and balance in a neighborhood that had hitherto degraded, through a contemporary interpretation of the 'universal garden', with the inclusion of objects international, representative furniture and decorations from all over the world, in which each inhabitant recognizes himself in his own way. Color also plays an important but different role, because it characterizes the three functional areas of the park: the red dedicated to sport, the green to the playground and the black to food. The living part (vegetation) has a fundamental role in characterizing the public open space, not only a park, but also a square or an avenue; reference is not made only to trees, but also to herbaceous and shrubby plants. For trees, the main problem is related

to their ‘slow’ growth, which means that at its inauguration a park never appears similar to three-dimensional visions of the project. This depends on the achievement of the so-called ‘ready-effect’, the realization of which is very expensive, because in the case of planting a large quantity of plants, this must be programmed well in advance through the cultivation of trees in the nursery. Significant examples are Expo 2015 with trees transplanted after being planted for over two years or the National September 11 Memorial & Museum. In this case, more than 400 Swamp white oak trees (*Quercus bicolor* Willd.) were planted, oaks of the North American forests symbol of rebirth, chosen both for their longevity and for the spectacular coloring of the leaves, which had been grown within a radius of 500 miles from the World Trade Center. For shrubby and herbaceous plants, the main contemporary problem is that of their maintenance, because after the realization of an open public space, obtained with the urbanization charges, the next phase of care often does not have the same attention due to lack of funds.

Plant species

The plant species used in the project strongly contribute to creating the identity of a place, they can have a strong emotional impact on the visitor and remain in his memory. Just think of the rows of cypresses (*Cupressus sempervirens* L.) which immediately refer to a typical Tuscan landscape, which are instead the result of the early 1900s project of the entrance path of Villa La Foce, in Val d’Orcia, by the English landscape architect, of Uruguayan origin, Cecil Ross Pinsent.

Plants can leave a mark and identify a place for many reasons. The main ones are:

- *historical and evocative*: some plants can be associated with a place or the image of it; they can arouse memories and emotions; they can be linked to the traditional use of these species or to their use in historic gardens.
- *ecological*: the choice of species in accordance with the environmental conditions can underline the characteristics of a habitat and contribute to its correct functioning; moreover, they can create a strong connection with the surrounding areas.
- *technological and innovative*: some species can be used for phytoremediation, improving or mitigating degradation and pollution situations; other plants, since unusual or with unusual morphological or phenological characteristics, can give a new identity or create an identity to places that do not have it.



Fig. 2 Entrance of Villa La Foce, Val D’Orcia (image source: www.flickr.com)

Trend in act

An ongoing trend that has now originated gardens with a new identity is the 'naturalistic planting design' (garden inspired by nature), which originated in late '800 England, with the Irish writer and gardener William Robinson. The latter successfully promotes the idea of a beautiful and easy garden thanks to the naturalization of spontaneous plants or from countries with similar climates, contrasting with the fashion of expensive annual flower beds.

The link between garden and environment is consolidated in other countries, in particular in Germany, Holland and the United States; in some cases, the garden is seen as a place to recreate associations of plants inspired by the natural environment in connection with studies on the geographical distribution of plants, in others a national identity finds in wild nature a strong distinctive element. For example, Jens Jensen, a Danish-born landscape architect, in the first half of the 1900s proposes the landscape of the prairie in parks and gardens created in the Chicago area, emphasizing the typical horizontal trend, or Karl Foerster (1874-1970), German nurseryman works on this theme, but with ferns and grasses.

The turning point that today leads us to use herbaceous plants in an innovative and sustainable way is with the new theorists of the contemporary landscape / garden. This method is initially applied to their garden property, subsequently to private spaces and finally to many open public areas. This has happened for Gilles Clement considered the most innovative garden philosopher of the last century for having highlighted the intrinsic concept of evolving landscape through the slogans of planetary garden and third landscape. His work based on the concept of man's collaboration with nature has changed the way we relate to the garden, shifting interest from aesthetics to the concept of biodiversity. All of this began in the late 70s, when Clément bought an abandoned land in La Vallée in the center of France in a sparsely populated area, where he built his totally self-sufficient house and transformed it into a *paraiso* (ancient term to define the garden) with the use of spontaneous vegetation, to grow insects and avifauna. The goal of the landscape designer is to enhance what was already present without destroying anything; thus was born the garden in movement, where the gardener no longer imposes a shape, but adapts to the pre-existing ones of nature, allowing the energy of the place to run its course, continuously changing the surrounding landscape.

A little later in 1982 the landscape painter Piet Oudolf buys land in Hummelo, in the Dutch countryside where in collaboration with his wife to develop his research he creates a garden nursery, thus starting to apply some of the concepts that will make him famous in the whole world.

As always in the historical evolution, in this particular case of parks and gardens, these are reinterpretation interventions, not real inventions, derived from the love and deep knowledge of herbaceous plants, from which their use resulted innovative. In particular if Clement prefers abandoned spaces, such as the edges of roads, embankments, railway lines, residual areas, marginal places, undecided fragments of landscape as a refuge for the majority of spontaneous vegetation, because they are natural, spontaneous and welcome much of biodiversity urban. Piet Oudolf designs an idealized spontaneous nature, through a dynamic process where the associations of plants change and evolve over time; uses poor plants: shower heads, daisies, spikes and weeds resistant and low maintenance, as beautiful as ornamental plants. Oudolf argues that we must not focus only on the blooms, but also on the shape and structure of the plants, so that they look beautiful even in winter. The Dutch landscape designer also undermines the classic concept of pruning, connected to a certain period of the year, but according to his idea, a good flowerbed should look interesting even when it is dead and a plant should be pruned only when you begin to be bored.

Plant species selection criteria: natives vs exotics

In recent years in the gardens and green areas design (especially in urban areas), environmental issues, climate change and the growing sensitivity of public opinion to the issues of nature conservation and to the impact on human health of pollution, have promoted the choice of plant species effective in improving environmental conditions, in reducing pollutants and in providing ecosystem services, placing their aesthetic value in the background (Niemelä et al., 2010; Baró et al., 2014; Demuzere et al., 2014; Maimaitiyiming et al., 2014; Mohammadi & Mohammadi Limaei, 2014). Many authors speak about sustainable green, especially in the urban area (Birch & Wachter, 2008; Mell, 2009; Cucca, 2012; Dawson *et al.*, 2014; Wachsmuth & Angelo, 2018), but the issues relating to the correct choice of species for the creation of a sustainable green are little treated. For a correct choice of the species, in our opinion, the main criteria are the following:

1. *Coherence with the ecological and environmental characteristics of the place* - macro- and microclimatic characteristics, exposure, brightness, availability of water, structure, texture and pH of the soil... A species coherent with ecological conditions will be able to adapt better and faster to the place, will grow stronger and more luxuriant, will be less subject to pathologies and failures, will make abundant blooms and fruitings;
2. In urban areas, *resistance to pollution and stress; pollutants abatement, storage and heat island mitigation* - in cities, above all, air pollutants represent a major problem for human health and cause stress for plants. Therefore, in urban areas it would be appropriate to select species that are able to resist the stresses caused by pollutants, often amplified also by summer water stress. In addition, efficient species can be selected for the assimilation and storage of CO₂, reduction of PM-10 and low VOC emission, which causes an increase in the concentration of O₃ in the lower layers of the atmosphere. The planting layout will be very important to amplify the efficiency of each individual species and to help mitigate the heat island and noise pollution;
3. *Ecological connection, biodiversity implementation and invasive exotic species restrain* - in species selection, consideration should also be given to the connection of the new green area with the existing neighboring ones. The creation of a network of green areas is fundamental, especially in the urban area, to create a resilient and efficient system for the provision of ecosystem services. A complex ecosystem is more resilient if rich in species and biodiversity; the species chosen for the project and their planting layouts, therefore, will have to guarantee an increase in biodiversity and so invasive alien species, that tend to simplify ecosystems and depress biodiversity, will be avoided;
4. *Low maintenance* - both in economic and management terms, the choice of species that satisfy the three previous points allows to limit irrigation, pruning, substitutions for failures and pathologies;
5. *Ease of supply in nurseries* - this will lower project and management costs and facilitate plant replacements.
6. *Historical, evocative and aesthetic value* - the species selection will also take into consideration the historical and evocative and aesthetic value, but as mentioned above it will not be the only or dominant criterion. The aesthetic appearance, beauty and pleasantness of the place can be enhanced through the design and composition of the project.

The issue of the use of native or exotic species in landscape design has long been debated (Oudolf & Kingsbury, 2013; Dunnet, 2019). The use of native species is undoubtedly privileged in the application of NBS, such as rain gardens, street swales and green roofs and in projects for the restoration and environmental recovery in suburban areas (Dunnet & Kingsbury, 2013; Dunnet & Clayden, 2007; Tallamy, 2009; Steiner & Domm, 2012; Harding Hooper et al., 2008). However, we believe that the

use of native species should be privileged in all landscape projects. Indigenous species are often the best choice in the design of a green space (from the small flowerbed to the large park), because they fully meet the criteria indicated above. Indigenous species answer better to ecological variations (for example, alternating conditions of aridity and humidity of the soil), require less maintenance, fertilizers, pesticides and water. Native species support natural habitats, increase biodiversity and provide food for local fauna: birds, insects, butterflies ... Native species are less competitive and invasive, therefore containment and pruning operations will be less. Eventually, some ornamental and exotic species can be added to the native species. If you opt for the use of exotic species, it is necessary to verify that they still meet the six criteria set out above and avoid invasive exotic species, which reduce biodiversity, are extremely competitive and require constant containment and maintenance.

Critical analysis of two case studies with identification of a working methodology for the use of herbaceous plants in a garden or park

The intent is to provide guidelines, also through case studies, for a sustainable architectural composition of herbaceous plants, with the use of native species easily available in situ. The concept of plants suitable for a given climate and place is the foundation for applying this methodology in another context, where herbaceous plants suitable for those climatic and environmental conditions will have to be used.

Through two examples of application of the theory of Piet Oudolf the High Line in New York and the Leuvehoofd, Rotterdam riverside, the in-depth analysis will be mainly on herbaceous plants on the chromatic, formal and dimensional alternation of them (Oudolf and Kingsbury 2013). The comparison allows to identify a working methodology for the use of herbaceous plants in a garden or park. In his garden the design of the plants is free, trying to imitate natural shapes. The garden is sustainable because it is designed with a view to collaboration between the plants used. The starting point is the study of the qualities of herbaceous plants, which are also inspired by wild plant communities:

Intermingling - plant communities are obviously composed of densely mixed species.

Diversity - The range of species varies greatly from one sort of plant community to another, but in most cases the is more diversity than meets the eye. The more you look, the more you see, particularity in grassland habitats.

Complexity - Imagine trying to count the number of species present in a square meter of grassland, not to mention the number of individuals per species. Part of the problem is the sheer intensity of the mixed relationships of the plants present.

Change - Complexity is not evenly distributed. Walking through the grasslands reveals a constant change in the distribution of species, or even their presence or absence. A change that varies with the seasons of the year and with the years (due to the natural dynamism of the vegetation).

Inspired by wild plant communities, through the appropriate choice of species and their spatial distribution, is a perfectly achieved goal in the New York High Line project; however, not only native species were used in the project but also some ornamental species, to emphasize the aesthetic aspect. The mistake that can be made, is to think that this type of vegetation has low maintenance: if you want to keep the initial design idea, you must prevent the vegetation from evolving by manually eliminating the invasive and unwanted species and pruning the shrub species. A continuous job to be carried out with skilled workers and with high costs. The alternative is to let the garden change, it evolves naturally, moving away from the initial project: Clement's moving garden ... The maintenance costs of the Rotterdam riverside project are even higher, because the arrangement of the species in regular groups (a blocks, as Oudolf says), requires constant work to keep the shape unchanged. Maintenance

costs rise further, if the choice of plant species is wrong, by inserting invasive exotic plants or plants not consistent with the ecological context, which must be irrigated and fertilized. This error is very frequent in projects, which, inspired by the works of Oudolf, use the same plants used by Oudolf but in a completely different climatic and territorial context. It is correct to be inspired by the great landscape architects, but by completely inserting the project in the place, not forgetting the identity of the place, the *genius loci*.



Fig. 3 High line, New York (image source: www.flickr.com)



Fig. 4 Leuveoohfd, Rotterdam (image: M. Manfroni)

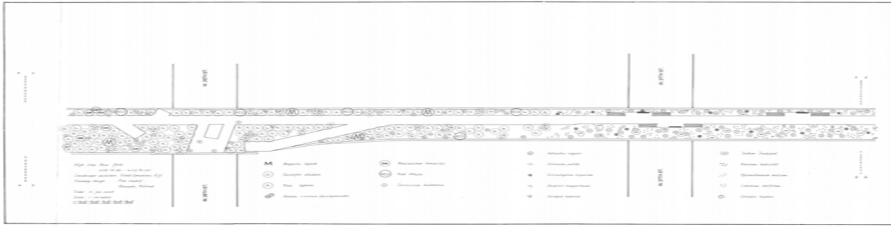


Fig. 5 High line, New York Design of Piet Oudolf (image source: <https://oudolf.com/garden/highline>)

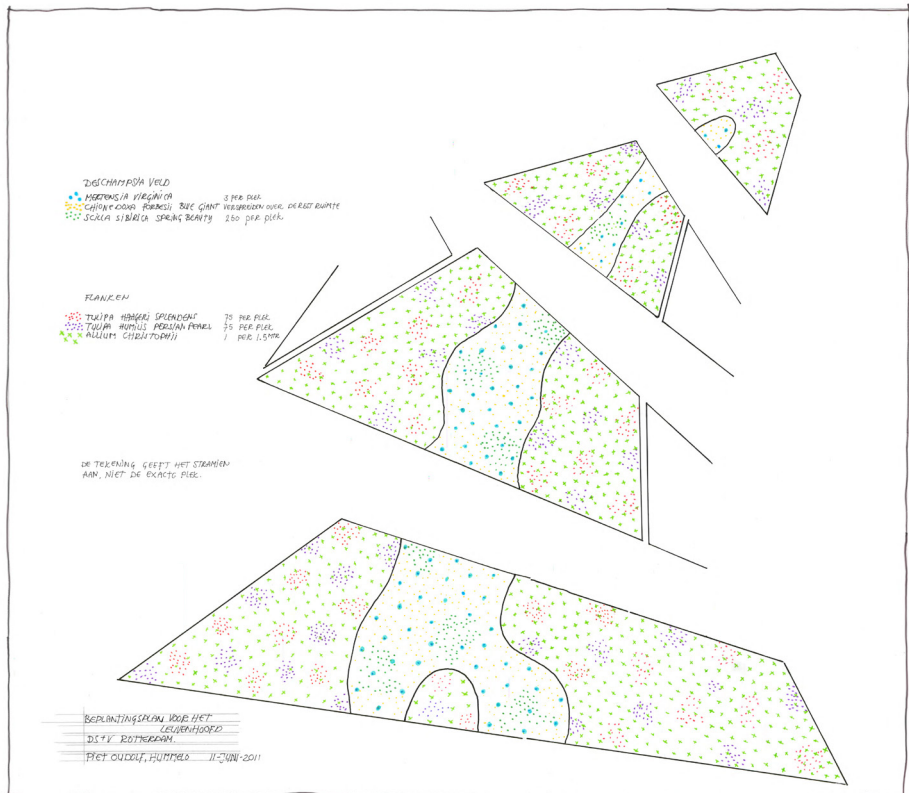


Fig. 6 Leuveoohfd, Rotterdam Design of Piet Oudolf (image source: <https://oudolf.com/garden/leuveoohfd>)

Conclusion

The use of Oudolf plants gives a new identity to the places for which he designs and plants them. On the High Line the character is that of the reconquest of the plants on the former infrastructure in Rotterdam is that of the block that recalls the regularity of the docks of the port city. The transposition and decontextualized use of these principles has opposite effects to those of defining a new identity. Often the effect obtained is striking with the context for which it was created, as well as not being sustainable.

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The VI International Conference on Drawing, De_Sign Environment Landscape City_Genoa 2020, deals with: Survey and Representation of Architecture and the Environment; Drawing for the landscape; De-signs for the Project: traces-vision and previews; Margins, signs of memory and the city in progress; Visual culture and communication from idea to project; Architectural emergencies; The color and the environment; Perception and territorial identity; Landscape cultural iconographic heritage: art, literature and design implications; Signs and Drawings for Design and Advanced Representation. Federico Babina, architect and graphic designer presents ARCHIVISION, and Professor Eduardo Carazo Lefort-University of Valladolid and Gold Plate of the Italian Design Union presents his Lectio Magistralis.

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