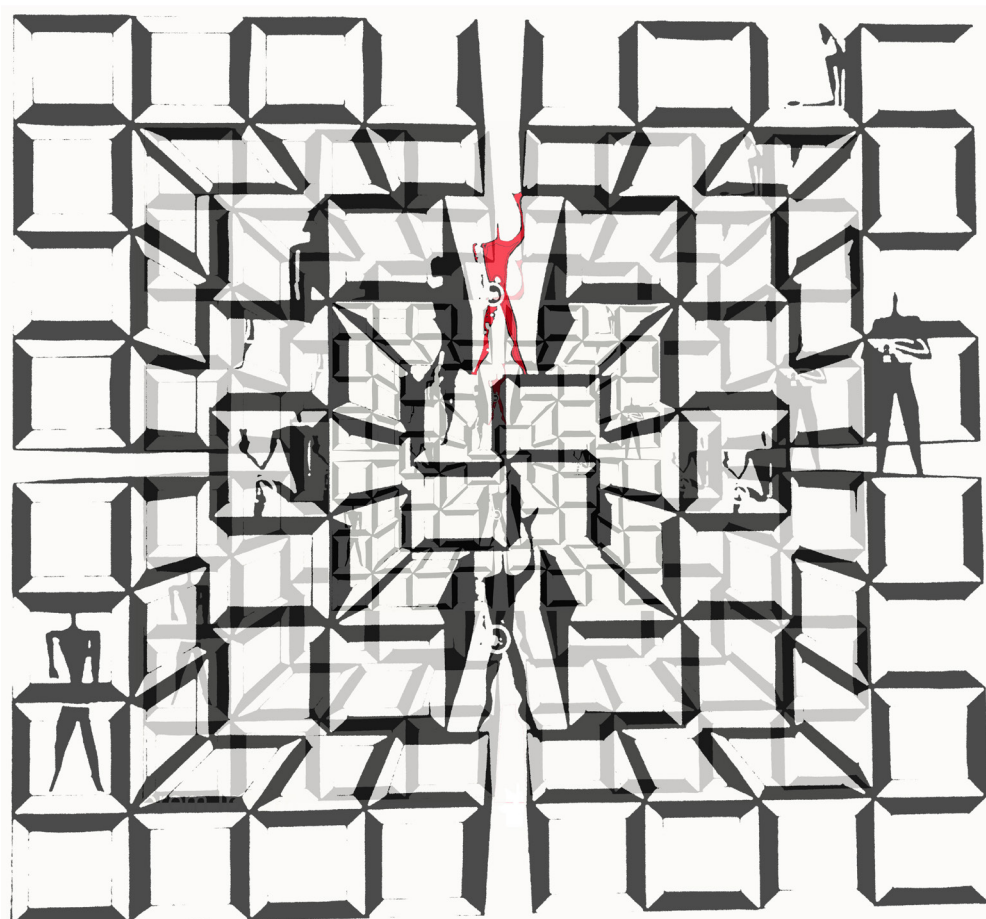


# **De\_Sign Environment Landscape City\_2020**

**Atti**

*a cura di Giulia Pellegrini*



*Atti*

## **De\_Sign Environment Landscape City/Di\_Segnare Ambiente Paesaggio Città**

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## Natural or artificial? Esthetic and purpose of green building envelopes

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### Abstract

Vertical greening systems are among the recent technologies used to increase and improve the performances of building envelopes; they can be classified as green façades and living wall systems, depending on plants use: climbing, potted or even growing hydroponically. The stratification that defines the system and the choice of plants determine different functional performances: mainly aesthetic, hydrothermal or for improving air quality. Also, the conceptual role given to the system can be different: it can be conceived as an aggression by lush greenery that tends to transfigure the building forms; or as a vegetation system that replaces, at least visually in an orderly way, the external protective layer of the building; or, finally, as a real high tech element. This paper presents some case studies to explore links between the green envelopes functions and the message contained in their formalexpression.

### Abstract

Tra le più recenti tecnologie impiegate per diversificare e modificare le prestazioni degli involucri edilizi, ci sono le facciate verdi e i *living wall*, ove in genere la differenza tra le due è legata al modo in cui le piante sono sistemate, rampicanti, poste in contenitori e persino gestite idroponicamente. La stratificazione che definisce il sistema e la scelta delle piante determina diverse prestazioni funzionali: principalmente estetiche o anche igrotermiche e di miglioramento della qualità dell'aria. Inoltre, diverso è il ruolo concettuale dato alla facciata vegetata: può essere concepita come una 'aggressione' da parte di vegetazione lussureggiante che tende a trasfigurare le forme dell'edificio; o come un sistema vegetale che sostituisce, almeno visivamente, in maniera ordinata e regolare, lo strato protettivo esterno dell'edificio; o, anche, come un vero e proprio sistema *high tech*. L'articolo mostra alcuni casi studio al fine di esplorare le connessioni tra le funzioni delle facciate vegetate e il messaggio implicito nell'espressione formale.

## Introduction

Observing the clear aesthetic complacency in the use of greening systems and green technologies in many examples of contemporary architecture, even by big brands, architects can think, in a dissociated way, that the ecological culture of the project has finally come out of the limited world of experimentation to spread widely as a status symbol. At the same time, a such exposed and uncritical pervasive embrace is too imperious not to be either naive or dishonest, or in any case superficial.

According with Gianfranco Marrone, who proposes a sort of «Farewell to Nature» (2011), a critical detachment is needed to rethink the meanings and ways of the man-nature relationship (if a real difference between them exists).

«Among the oddities of this bizarre era, there is one that is hardly understood [...]: this is the enthusiasm for Nature. [...] An enthusiasm determined in purpose, but vague in content» (Marrone, 2011, p. 4).

In our present, where every cultural trend is minimized and reduced into slogans before we can fully grasp its deep meaning (Giachetta, 2013, chap. 4), the aesthetic and superficial celebration of the bond that we have as humans with nature, also through the construction of our living spaces, does not take place to safeguard it, but primarily to continue our supremacy over it. If scientists say that it is necessary to change, immediately we are running to find the design shape of this change, but this attitude – albeit understandable – is risky in terms of substance, not only in relation to the fundamental principles of change, but also with respect to the meaning of architectural aesthetics itself (fig. 1)



*Fig. 1 Temporary installation of a vertical greening system in Milan (Italy)*

«The current aesthetic of nature is not based on a theory of beauty and aesthetic experience, but on a generic aesthetic of respect for the environment and on an absolute, implicit dependence on the cognitive outcomes of scientific practices» (Marrone, 2011, p.24).

Considering the current success of sustainable architecture, it would be simplistic, if not totalitarian or both in the worst-case scenario, to claim that what seems right to us is also beautiful. We do not consider beauty on a formal, compositional and geometric level, not even on the constructive-technological and functional level, we just consider a fashionable socio-political trend. This so far overlooked issue begins to prompt deeper reflections. Today's aesthetic of nature – not only in architecture – is far from the balanced Greek imitation or the medieval mysticism (even if these new dark times are dangerous). It seems in fact a very strange and improvised mixture of naive romanticism and neo-positivism.

We are willing to be moved by the image of an abused nature that we would like to keep untouched, by the lonely bear on the melting ice, by the porn-ecological «lion at sunset» (La Cecla, 1991, p. 63), by the «third landscape» identified by Gilles Clément, as an area that survived the general ruin because was forgotten (Nicolin, 2012, p. 83); but, at the same time, we are ready to imagine super technological flowery meadows that cover a city of skyscrapers (Giachetta, 2013, ch. 5), as a magical solution to all our problems (but is it like sweeping dust under the carpet?).

If «love for nature was an invention of romanticism» (Bondi, La Vergata, 2014, p. 160), it was then able to produce, mixed with Calvinism and Puritanism, the desire for disobedient escape in the wilderness for the American transcendentalism, for Ralph Waldo Emerson, David Henry Thoreau and John Muir. In Enlightenment thought, on the contrary, wild and indomitable nature was nothing but a repugnant spectacle (Bondi, La Vergata, 2014, p.158); even natural landscapes, like Alps, did not seem sublime to travellers of the late eighteenth century, like Georg Wilhelm Friedrich Hegel who, by crossing them, even came to feel «disgust for landscapes that showed no trace of the active presence of man» (Bondi, La Vergata, 2014, p. 158). The problem is that these two historical, antithetical and, therefore, legitimate positions both coexist in our contemporary vision of nature and in its image. There is still a desire to reconquer an Eden, but it is not known if it will have the shape of a forest or an Italian garden, and now we are too cynical to fully desire it. Even our vision could be legitimate, albeit ambivalent, if it were the result of an aesthetic thought, which instead does not exist or rests only on historically fragile – but scientifically solid – bases which are those of environmental alarm and limit of resources.

If, for once, we forget the very important and recent ecological story of architecture, slightly widening the horizon, we could realize how confusedly intertwined the historical roots of the modern relationship between nature and architecture are.

Just one example among the many. The first building that fully represents aesthetically, socio-politically, the collective, technological, constructive, productive, aesthetic-perceptive imaginary, from the industrial revolution onwards, is paradoxically Joseph Paxton's gigantic greenhouse, the Crystal Palace, which was however conceived on the model of a structure created for the artificial control of nature (Strike, 1991). Obviously, it could be a coincidence that the maximum aesthetic expression of the Enlightenment culture is a greenhouse transformed into a universal exhibition, and we could leave it out, considering that architectural inspirations have always been the most diverse and unthinkable. However, it is not really possible, given the symbolic aspect assumed from that moment on by the concept of dome-greenhouse as a phantasmagorical space of preservation. The dome protects human ambitions even in a hostile environment, thanks to the socio-political and technical control of the atmospheric survival conditions (Sloterdijk, 2015). It allows us to safeguard nature from our own delusion of omnipotence here on Earth, as on future planets, where we will force ourselves to escape. Just to mention some of the most famous Paxton's descendants architectures, expression of these meanings: the megastructures of the Archigrams, in particular the Underwater City of Warren Chalk of 1963, as well as their capsules, for example Living Pod of David Greene of 1966; the geodetic domes of Rich-

ard Buckminster Fuller, and in particular the one on Manhattan of 1968; Biosphere 2 by billionaire Ed Brass and Space Biosphere Ventures from 1987; the Eden Project by Nicholas Grimshaw & Partners of 2001; the imaginative (although Norman Foster is already working on it) survival greenhouses from movies, like *The Martian*. These are just a few of the many examples of a poised conception of an architecture-environment relationship, which is far from being linear, rather it is multifaceted, contradictory, especially on the symbolic-expressive level. There is a path marked by a wilderness as a mirage of escape possibilities, on the other side, one marked by a desire for bio-political control of living conditions on the planet (Nicolin, 2012, chap. VII); nature can be understood as freedom and disobedience from the rigid patterns of the Modern, but freedom can be disobedience from the laws of nature; we can follow the contemporary claim of architectural organicism and mineralisation of green in constructed forms; run from a nature interpreted as immaterial or as architectural matter; design vertical forests, but it is not yet clear whether they are green built city islands, or concrete forests.

Given this multiplication and overlapping of contradictory meanings, if we want to begin to face more concretely the aesthetic relationship between architecture and nature, we have basically two possibilities.

If we choose to consider, in architecture as in art, a conception of beauty that autonomises itself by standing monumental and solitary, nature can be understood as a further opportunity for aesthetic experimentation (Emery, 2007, p. 12). In this case, the contradictions (which in fact can be useful) are of little importance, but it is necessary, however, to accept that nature is a passing opportunity that can set as soon as its time has passed. However, an aesthetic of architecture based on nature could pass as soon as green is no longer in fashion. Why has it to last, if our era has not so far been able to build its own aesthetic identity around this epiphenomenon and is far away from the rigor with which others have measured? (E.g. the Greek conception of beauty).

If, instead, «the project is inscribed in the overall teleology that poses well-being, the promotion of a qualitatively good life, as the end of any meaningful practice» (Emery, 2007, p. 11), then «design means orienting what we do for this ultimate purpose» (Emery, 2007, p. 11). The beautiful works – according with Plato – will be those works that offer themselves a «breeze that blowing from solid countries brings the invigorating breath of health» (Emery, 2007, p. 11 citing Plato, Republic, 401 b).

By following this second approach, the risk is surrendering to a somewhat naive scientist aesthetic of sustainability which recognizes, sometimes a little simplistically, that what is good is also beautiful. To face (or ride) this risk, architects must be less architects of form to avoid a crisis of meaning that opens up «when a form of doing loses the essential causes for which it exists and for which it should act, the principles are lost. Hence the possibility of rationally legitimizing one's own doing is lost» (Emery, 2007, p.28). However, accepting this second option is not easy.

### **Does an ecological beauty exist?**

The repercussions, linked to the concept of sustainable development in architecture, have led to focus the attention on the relationship between what is good and what is beautiful, called by Sutton (2014) as 'ecological beauty'. In a certain cultural context, all the technical solutions deriving from strategies for reducing environmental impacts are therefore considered to be capable to positively characterize buildings and even energy production infrastructures, from an aesthetic point of view. However, it is evident that this value system is not shared by all. Referring to the constraints on the application of photovoltaic panels on historic buildings or on the installation of wind turbines on the ridges, it's clear

how historical testimonial and landscape values are considered, at least in our Country, with higher value than renewable energy production.

Aesthetics, therefore, has to go through an evaluation process.

Even within the same sphere, different functional and aesthetic variables can be considered as green solutions – and in particular the use of vegetation which modifies environmental quality and/or reduce energy consumption for the buildings' air conditioning –. Considering the vertical greening systems, these are commonly divided into three macro categories in relation to their support structure: direct green facades, indirect green facades and living walls. Within each category there may be variants related to the type of plants used – in relation to the performance required but also, and above all, to the climatic conditions in which they must survive – with different leaf densities, morphology, colour and, consequently, aesthetic outcome.

But if perception can be defined as an evaluation of what is sensory detected, the evaluation, as a cultural gesture, tends to be subjective. Sutton (2014), with the differentiation between Enjoyable Beauty, Admirable Beauty, Ecological Beauty, underlines that subjectivity depends above all on the detachment from the context of the object contemplated. The evaluation will depend on the culture and on the 'history' of the perceiving subject. Changing his knowledge about a subject will change his perception. Sutton proposes some criteria to discuss how Nature Based Solutions (NBS) such as facades and green roofs can be increasingly considered 'beautiful', summarising: 1) facades and green roofs must be evident in quantity and appearance; 2) involvement and participation are useful to improve knowledge; 3) the concept of care connects knowledge, objectives and commitment; 4) biodiversity must be increased, avoiding stereotyped solutions in the choice of plants; 5) it is necessary to design differently, combining function and attention with perceptual aspects.

While several studies investigate how some characteristics of green facades can influence their acceptance by citizens (presence of insects, presence of flowers, etc. e.g. Magliocco et al., 2015), what seems really interesting for an architect, is how the configuration of greening system can characterize or transfigure a building. Scientific journals debate on the ability of the different species to retain fine dust, to reduce the thermal load on the facades, to lower the temperature of air incoming in the building's ventilation systems (Pérez and Perini, 2018). Architects, instead, often experiment forms and solutions in the prevailing ignorance of functional aspects, taking advantage of the trend that what is green is perceived as healthy, good and therefore beautiful.

Dezeen webzine (tag: green walls) shows a large number of projects with a green facade and it is easy to notice how different they are from each other. The residential building designed by MVRDV in Sint-Michielsgestel, the Netherlands, is characterized by a large number of planter boxes, some of which are out of scale. On the other hand, in Sheppard Robson's project for the multifunctional building Citicape House in London – for which he declares that it will be the

«largest living wall in Europe» aimed at improving air quality – the plants faithfully follow the structural elements of the facade drawing a lozenge grid. Finally, looking at Stefano Boeri's project for the 'vertical forest' in China in the centre of Nanjing: the buildings seem completely attacked by vegetation (at least in their intentions), like abandoned temples.

### **Aesthetic and evolution**

Biophilia should be defined as «the innate tendency to focus on life and lifelike processes» (Wilson, 1984), this legacy suggests that humans are innately attracted to nature. For example, the appearance of the natural world, with its rich diversity of shapes, colours, and life, is universally appreciated. This appreciation is often invoked as evidence of biophilia. Human divergence from the so-called natural world appears to have occurred in parallel with technological developments, especially during 19th and 20th centuries, which fundamentally changed human interactions with nature. However, this attitude remains and seems to be the same that linked humans to green, citizens to green technologies inside the city, especially vertical greening, which can be more appreciated by people, at a ground level, in comparison to green roof.

According to Wilson, the Biophilia concept is based on the ethic and innate relationship that humans have with nature. His notion of environmental stewardship drew on different issues, including the practical dependence of humans on nature, which centres on the ecological services provided by nature and that are becoming increasingly important because of the threat of climate change and the impoverished urban environmental quality; secondly the satisfaction derived from direct interaction with nature, easier with a green façade, and consequently, the physical appeal of nature, as a cultural services, cannot be underestimated; finally, they are a sources of emotional connections to landscapes and animals, which can be other biotic elements hosted by green technologies in addition to plant species.

The artificial use of green is directly connected with innovation technologies. The meaning of innovation generally refers to a modification of what we usually associated with known objects, actions or behaviours. It is something completely new, even though not necessarily an invention, which can modify something that already exists. Thus, the adoption of a new technological innovation can bring new aesthetics in architecture. This evolutionary process also occurred for the use of green in architecture. If we start from the most ancient examples of the use of green, we find the green roofs and the semi-hypogeal buildings of the northern countries (fig.2), which were the result of a design attitude attentive to the climatic context but not yet technologically advanced. The purpose of these technologies was the performance and tied to necessity rather than aesthetics, as, in the contrary, happened in the past, for example, in the design of gardens. But nature and green are too complex to be considered only at functional or aesthetic level.

In its projects like the Forest Showroom and Richmond in Virginia (1980), the SITE group for open spaces wants to underline the organic nature of the concept of home, the relationships between architecture and environment, society and psychology (Pisani 2006). James Wines says that nature is primitive, metamorphic and infinitely ambiguous. It is rich in associations and the only totally universal source of symbolism in art. It is a regenerative source of content that eliminates redundancies and constantly reveals new information. Through its infinite complexity, nature is endowed with an instructive and inspirational force that can advance the language of architecture and confirm humanity's inalienable right to try to save a place on this planet before it is too late.



*Fig. 2 Traditional green roof in Iceland*

The mission now in the art of building, as in all human endeavours, is to recover these fragile threads of connection with the earth that have been lost for many centuries now. The key to an environmentally sensitive architecture for the next millennium relied on the creation of bridges that combine technological conservation, ecology, based on philosophical ideas, and their incarnation in the vision of a new language (Wines in Pisani 2006).

The integration of a greening system is often related also to an explicit desire to improve the image of a city and a building, often of little value, against which there is a deep refusal. The Wohnpark Alterlaa in Wien (fig.3) designed by Harry Glück, is a residential complex of the Nineties, which tries to combine the residential tower-type in reinforced concrete, with the use of greenery. The layout of the apartments follows Harry Glück's concept of "stacked single family house" in the form of apartments with a terrace. Complementing this concept, there are sowing tanks of almost 4 m<sup>2</sup> up to the 12th floor, which also act as a privacy screen and a small garden. A more sustainable aesthetic belongs to Venticinque Verde in Tourin, where we find again terraces and vases, but combined as a sort of forest of giant-scale gardens (fig. 4). The use of green facades therefore plays a fundamental role in the city, and as previously underlined, technological innovation and the improvement of urban comfort stimulate researchers and designers towards complexity and solutions that can also be technologically very advanced.





*Fig. 3 The Wohnpark Alterlaa in Wien, by Thomas Ledl - Alterlaa Pflanztröge CC BY-SA 3.0*



*Fig. 4 Venticinque Verde, Tourin (Italy)*

Among the more complex solutions we find Patrick Blanc's living wall solutions (fig. 5), highly expensive, with intermediate solutions, as in the experience of the green facade in Sestri Ponente on Inps building (fig.6). Finally, there are particular solutions for structures in outdoor areas and parks, such as the case of the MFO park in Zurich (fig. 7), where a large metal pergola structure, a sort of glassless industrial greenhouse, is covered with climbing plants. In this design choice, beyond the motivation linked to the control of the microclimate, an aesthetic force linked to the industrial world is clearly legible, from which in a certain sense we started with the example of the CrystalPalace.



*Fig. 5 Musée du Quai Branly, Paris (France)*



*Fig. 6 INPS green façade, Genoa (Italy).*



*Fig. 7 MFO Park, Zurich (Switzerland)*

## Conclusion

The first examples of a designed green facades arise from a need to mitigate phenomena related to the control of the microclimate and heat dispersion, up to the need to mitigate the excessive quantity of cemented surfaces in our cities. Secondly, there is a more tied approach to landscape design, with extreme results in Patrick Blanc's solutions, driven by a merely formal intent.

Today designers have taken over green as the main material to be used in sustainable architecture, exactly as it happened for timber, of which both physical and aesthetic-formal characteristics can be exploited. The use of green can be more or less technologically advanced, but necessarily complex and artificial due to the vision of man.

In architecture, the introduction and development of a technological innovation, a green one in our case, depends on the predisposition or the necessity to accept the changes offers. The more the environmental issue has become a worldwide problem, the greener technologies started being applied to the construction industry. The spread of greening systems, which has increased over the past ten years, is attributable, on one hand, to a more sustainable approach to construction, improving building performance and environmental conditions, on the other hand to an aesthetic intentionality linked to green as an ecological material par excellence (Perini, 2013).

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La VI Conferenza Internazionale sul Disegno, *De\_Sign Environment Landscape City\_Genova 2020* tratta di: Rilievo e Rappresentazione dell'Architettura e dell'Ambiente; Il Disegno per il paesaggio; Disegni per il Progetto: tracce - visioni e pre-visioni; I margini i segni della memoria e la città in progress; Cultura visiva e comunicazione dall'idea al progetto; Le emergenze architettoniche; Il colore e l'ambiente; Percezione e identità territoriale; Patrimonio iconografico culturale paesaggistico: arte, letteratura e ricadute progettuali; Segni e Disegni per il Design e Rappresentazione avanzata. Federico Babina, architetto e graphic designer presenta ARCHIVISION, e Eduardo Carazo Lefort, Docente dell'Università di Valladolid e Targa d'Oro dell'Unione Italiana Disegno la Lectio Magistralis.

*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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