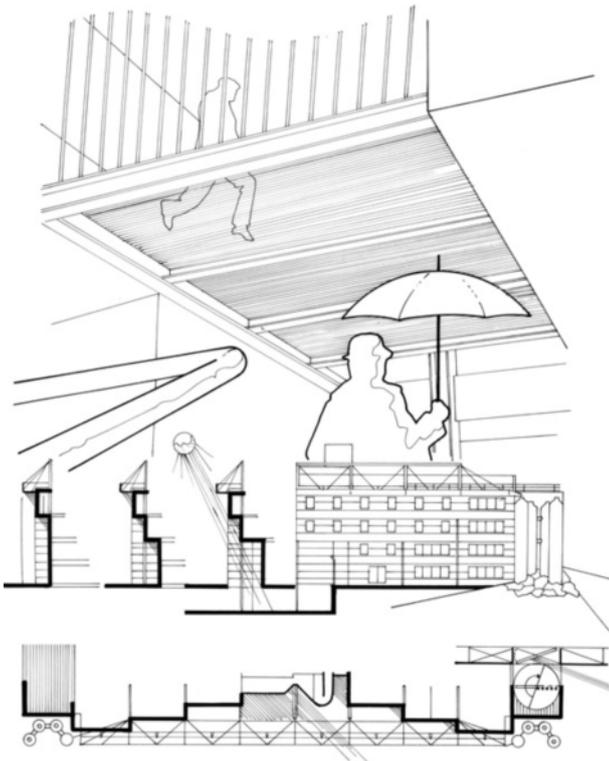


"architecture and sustainability: theory / practice"



sustainability sustains **A**rchitecture
survival thought design



1 Sustainability is now a commonplace. That's all right. But it is so much a commonplace that there is now no architecture which does not offer itself as sustainable; also the one which, on reflection, is not.

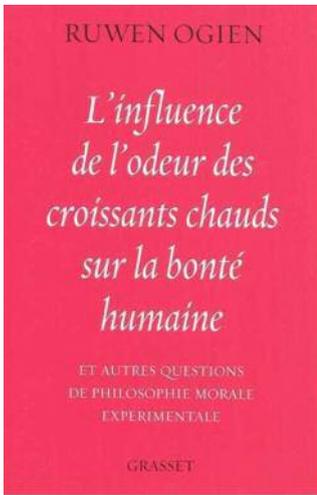
After having denied stylistic features (Ionic, Doric and so on , over centuries), linguistic connotations, any form of architectural "–ism" (... functionalism, rationalism, expressionism, post-modernism, de-constructivism,...) and ancestral misunderstandings, now pleonastic adjectives are used, which –with the enthusiasm of novices- affirm prerequisites which the building activity should never disregard (antiseismic, bioclimatic, sustainable,...). Although trivial, these essential prerequisites are not always met, and it is thus wise not to stop emphasizing them, remembering them obsessively, until they become usual practice.

The building activity's target is substantially easy but it is practically difficult to pursue because of clashes of opinions, different views and above all opposing objectives. The target of architecture – in transforming the physical environment – is to contribute to improve the human condition, projecting this improvement towards possible future scenarios since the human condition is "plural", hardly homogeneous, different in space and time. Hence, transforming well, building well: at a given historic moment, in a given context, within specific conditions, sparing every factual state its tendential set-up, injecting into it visions of future or at least appropriate responses to transformation needs.

"Sustainable" is what *"meets the needs of the present without compromising the ability of future generations to meet their own needs"* (Bruntland Report "Our Common Future" WCED 1987).

In architecture – in the transformations of the living environment – sustainability is the result of integrated evaluations, of projects which do not restrict themselves to meet precise individual needs, but are above all inspired by "super-individuality": because they are fragments of larger, freer systems, not elements of pre-set jigsaw puzzles or sets of Russian dolls. In other words, sustainability in architecture is found in projects which are never isolated, but able to be in tune with what pre-exists, of becoming part and parcel of the environment, of landscape, of the physical stratifications which shape the context into which they will be included. Such projects are also open to future predictable and –it is not a paradox - even unpredictable developments.

Sustainable architecture by definition sets aside precarious functional needs, is ready for change, looks elsewhere for the reasons of its form.



The sustainability of a work of architecture (which is synonymous with whatever physical transformation of the living environment) is not restricted to physical-spatial features or to features pertaining to matter, to flexibility or adaptability in time. It also means being able to become part of the cultural, economic, social dynamics: in a nutshell, of “a-spatial” contexts.

“Sustainable”, therefore, can only be what is part of a web, what is conceived and experienced as such, able to react to the mutations of the contexts including it.

The form of spaces affects behaviour, can build up psychological obstacles or, instead, give a sense of freedom, safety, wellbeing, joy: there is even somebody who demonstrates “*L'influence de l'odeur des croissants chauds sur la bonté humaine*”(Ruwen Ogién 2011). Architecture is sustainable, then, in its different variations, beyond any restriction, observing the relations between different aspects, avoiding the traps implied in examining them having one’s own end in view.



2 In December 2008 at the Cité de l'Architecture et du Patrimoine in Paris, « *Le Carré Bleu – feuille internationale d'architecture* », launched the *Declaration of Human Duties* in connection with habitat and life styles, respecting differences. This Declaration derives from the conviction that sustainability cannot be pursued without large participation, without changing frames of mind, without considering the deep diversity of the various contexts.

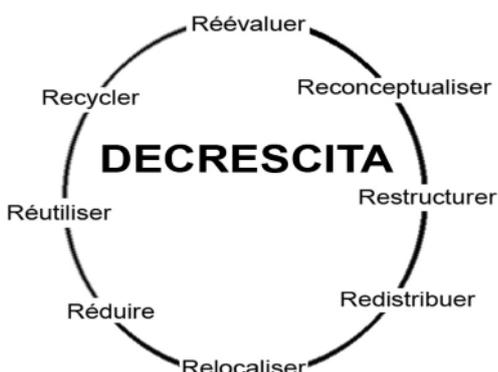
No totalitarian or globalizing boost can be suggested, but for what concerns climate and environmental problems, the only ones which are boundless: “*Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?*” is the well known rhetorical question asked by Edward Lorenz – precisely on May, 13th of 40 yers ago – to the American Association for the Advancement of Science. In this sense the theme of sustainable architecture is a planetary invariant, but needs different interpretations in the different contexts.

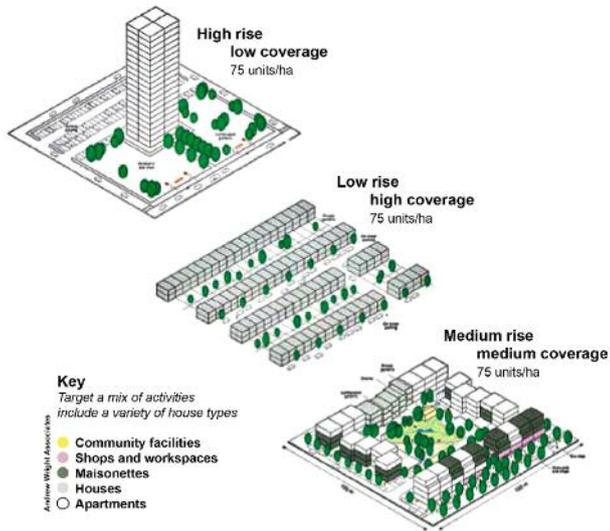


“Does the Flap of a Butterfly’s Wings in Brazil Set Off a Tornado in Texas?”
Edward Lorenz

Nowadays, particularly in the European continent, the themes of de-growth, leanness and in general the ones of architecture in times of crisis are the most discussed. These themes concern every individual project and are related to territorial and urban policies, the questions of mobility, the system choices connected to the built, to its components and materials: even concrete – which, par excellence, often defaces environment and landscape – whose production is one of the main sources of greenhouse gases, can reduce its ecological footprint by using magnesium silicates which absorb significant quantities of CO2 during the cooling and casting stages.

In the mid 20th century, the European Countries strongly reacted to the post-war crisis: with a sense of liberation, clear objectives, hope in the future. The present crisis, instead, seems to produce





tre alternative: sempre con densità 75 unità/ha
These three very different architectural forms are built to exactly the same density of 75 dwellings to the hectare.

a withdrawal into themselves which risks to strengthen it or even to quicken it. To oppose it, also in this case, it is necessary to try and find again the lost principles, contextualizing them and projecting them towards the future. “Sustainable”, is, of course, what “meets the needs of the present without compromising the ability of future generations to meet their own”: but among the present needs there is the improvement of living conditions at a global level, not at the level of privileged societies. Separating the ecological logic from the processes of physical transformation of the territory is reductive and not topical. Only does an integrated view produce a future: for millennia “nature” has been transformed into “culture” and there will be a future only if this connection is not broken.

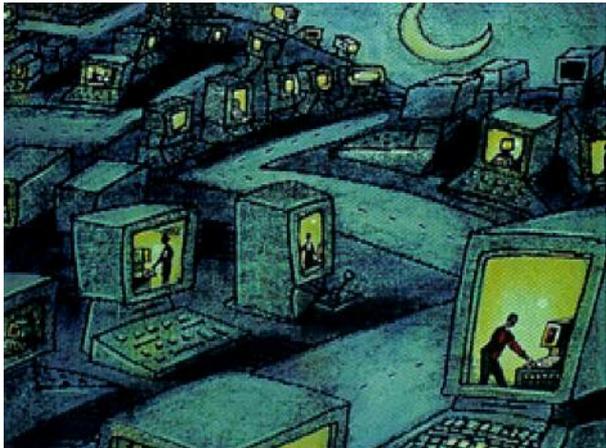
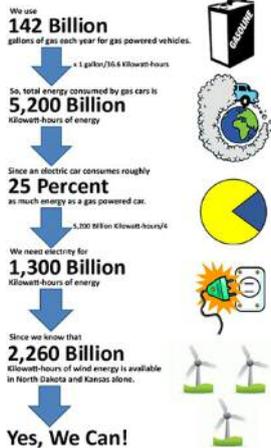
Today, a structural revision of the usual ways of planning the territory is mandatory: density and spatial relations have strong impacts on the ways of living, on energy consumption, on greenhouse gas emissions.

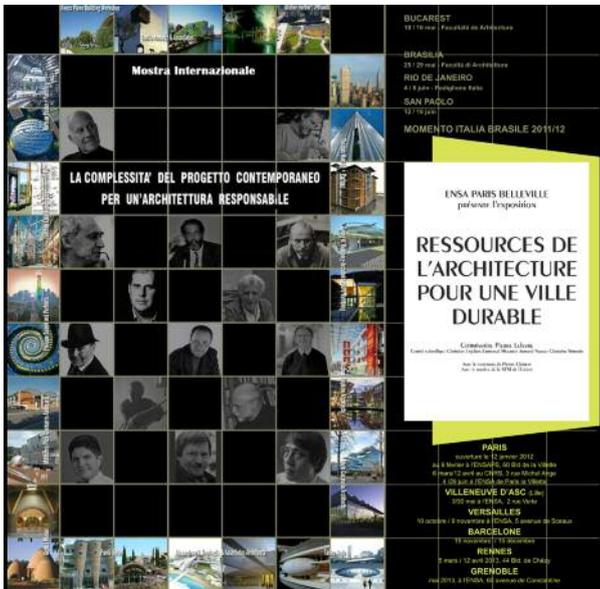
Sustainability – in every sense of the word – has to be affirmed and supported, not only in connection with the environment and the great natural issues. It also requires flexibility, willingness to change, changes above all in the frames of mind; it supports co-presences and diversity. From other standpoints it is also compactness, high density, reduction in soil consumption, use of water cycle, of air movements, reduction in energy needs, use of local materials, recycling, innovation in systems and lower demand for mobility.

The car era, as we know it, is coming to an end. For electric cars new roads are foreseen with wireless canals along which vehicles can be recharged. High density and compact urban fabrics favour pedestrian paths and new forms of common mobility, urge towards functional mixing, to go beyond zoning, to new residential forms. In dense territorial contexts, information technology does not favour isolation: on the contrary, it strengthens alternative aggregation forms, it makes people indifferent to their place in space, it brings to the re-discovery of smaller centres. But the future of our cities, of the different ideas for urban agglomerations in their different cultural contexts and for their different trends, cannot be discussed in this short presentation.

The Mathematics of The Electric Car

Can the US Really Replace Gasoline with Electricity?





3 Awaiting for future revolutions, sustainability in architecture affirms itself with difficulty, but in less and less approximate forms. Two specific exhibitions which are touring the world in these days substantiate that.

Three days ago, the eleventh stage of the exhibition “*The Complexity of the Contemporary Project for a Responsible Architecture*” was opened in Bucharest. In June it will be on display in South America and then in Asia.

Some months ago the exhibition “*Les ressources de l’architecture pour une ville durable*” started to circulate in France – in autumn it will be in Spain – with projects particularly sensitive to these themes.

Both exhibitions include some of our works. In a short presentation this enables us to develop our reasoning with direct experiences, all of them chosen more or less in the same geographic-climatic area and grouped into three categories.

a. the urban scale

a.1. rehabilitation of a decommissioned area:

KO-CO₂ Terlizzi

a.2. interweaving in the consolidated city:

Benevento/Rione Libertà + Università del Sannio

b. the building’s scale

Schools in Camerino + Offices in Recanati + Pistoia Library + Buildings in Cremona Old Town + Algiers Library

c. the intermediate scale

c.1. built complexes

The Science City + Caserta Faculty of Medecine and Surgery

c.2. open spaces:

Naples/ Square in Fuorigrotta + Sports Park + Kotor Bay+ Genoa, Parodi Bridge

a. The urban scale



a.1. rehabilitation of a decommissioned area :

Terlizzi Be Clean / Be LEAN / Be green

rehabilitation of a decommissioned area 18 hectares, occupied by 2/3 by an industrial plant, are given back to the city by cancelling the railway barrier: from the heart of the old town a cycle-pedestrian pathway passes over the railway and the roads linking the old town to the project area, smoothing the relations between parts of the city presently foreign to one another, converging to a Square above the new railway station.

North of the Square there is a covered Market, south of it a park of more than 3 hectares, acoustically screened from the railway by a bending photovoltaic wall which is reflected in a bio-lake in which bathing is possible.

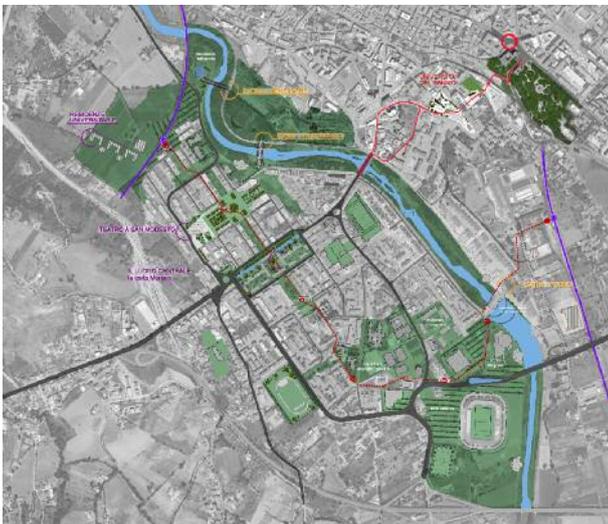
A new type of "centre" plays the role of hinge between the old town and the new integrated urban system, characterized by bio-climatic principles (southward open yards, green spaces, individual greenhouses, recovery of rain water, jeux d'eau, high energy efficiency, no vehicle circulation, etc...).

Houses of different heights with courtyards characterize the urban fabric. Integration and functional mixing are secured by the presence of nuclei with productive functions, workshops, offices, social dwellings connected to urban scale services and facilities (kindergarten/teaching farm to the south, plastic reorganization of the ground to the east, with a space of worship; large wood areas).

The views from and towards the old town are enriched by an "urban tower" (a reminder of the old "clock towers") and by the arches supporting the Square above the railway, reminiscent of the present vaulted ceiling of the industrial plant.



- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – project 30
- www.pcaint.eu/theory/multimedia/koco2 – Terlizzi, multimedia video/English version



a.2. interweaving in the consolidated city:

Benevento: Reorganization of Rione Libertà + Sannio University

The 20,000 inhabitants of Rione Libertà, although living close to the old centre, are marginalized from the city. The river emphasizes the separatedness of the district. According to the project, the mobility in the district is secured by a hydrogen-powered shuttle tramway, a perfect system for the sharp cut of the polluting emissions of the current transportation means.

The whole "energy chain" (from the production of hydrogen to its use in "Fuel-Cells" on tramways) is totally environment-friendly.

Hydrogen will be extracted from water by using electrolisers fed by the electric energy produced by polychromic photovoltaic panels contributing to transform the shunting stations with the Regional Railway System into visual 45 m. high reference elements. The shuttle is coated by photovoltaic panels which integrate the generation of electric energy directly onboard. The use of electric energy from a renewable source, as the solar one for hydrogen extraction, characterizes the latter as environment-friendly "green hydrogen". Hydrogen will be produced and stored close to the terminals from the daily reloading of hydrogen bottles onboard the tramways.

By reorganising the banks' green areas and redesigning the banks, small caveas will be created for performances or only to stay. Between the two "locks" - the water stretches into which the future Conference Centre is mirrored – also the river will reconquer the old role of an element able to explain the reasons of the whole urban settlement with three pedestrian bridges connecting Rione Libertà and the consolidated city.

The new University complex is not far away: it follows the new connection to the old centre. The continuity of pedestrian pathways is at the basis of the whole topological and morphological structure linking – with no interference with car traffic - points presently very far from one another.

The new urban system – availing itself of the rich morphology of the site – is a sequence of equipped public spaces, through the built, it passes through the roofing of classrooms and library, and passes over the present streets. It continues below the building for multimedia laboratories and reaches, by a lift, the already existing university spaces upstreams, in an urban connection system which is very important for the relations between the centre and the outskirts, but also for the links between the university buildings present in the old centre and the new ones.



- www.lecarrebleu.eu n° 2/2008
- Pica Ciamarra Associati, Eteronomia dell'Architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 28-31
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – projects 28-29
- www.pcaint.eu/theory/multimedia/video/Benevento – ricuciture urbane

b. The building's scale



Camerino, School and Sports Complex

The project envisages two distinct nuclei: the former housing the I.T.C.G. and the "Istituto Magistrale", the latter housing the Great Hall. The complex is designed in harmony with the surrounding territory, placing itself in a direct relation with the hill's contour curves. The external spaces follow the already existing rural features, respecting them and also respecting the local typical plants which will be integrally preserved and enriched. The choice of materials and construction techniques is dictated by the needs for environmental wellbeing, architectural quality and simplicity, involving thus durability and reducing maintenance costs. The ventilation system of the complex is based on natural ventilation: the air entering the building from the basement, circulates and is discharged through vents exploiting two natural principles. Through the solar irradiation of vents, the air tends to go up; according to the chimney vent principle the discharged air is brought away by wind.

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 24-25



Recanati - Teuco-Guzzini Office Building

The building –characterized by solutions connected with green, water, sun – contributes to the firm's image: the bioclimatic strategy produces a compact building, a northward strong external image and a southward internal "place/square". The slope towards the street is a meadow. The front is a "grid" framing Recanati's hill. The energy strategy adopted emphasizes the efficiency of cooling and heating systems, obtained thanks to simple devices, "integrated" into the building's architecture. Hot and cold vents are inserted in the hot southern wall, and are free to the north and helped by the evaporation of the water veil flowing along them producing convective air flows which guarantee a good level of natural ventilation. The internal distribution permits a continuous air movement. Vertical gardens mitigate summer exposure to the sun on the east/west fronts thanks to deciduous plants supported by a grid of cables: an external green curtain, 70 cm. from the façade.

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 20-23



Pistoia - Sangiorgio Library

The project refurbishes a hangar of the former Breda area in close contact with the old town. The pre-existing structure (some 4,000 sq.m., the walls 40 m. apart) has been turned into a Library (7,000 sq.m. / 350.000 volumes / 600 reading places / Childrens' Library, Conference Hall/ Offices). The project redevelops the old vertical structures, introducing wide horizontal floors, and redesigns the vaulted roofs with laminated wooden arches, sets a compact figure on the longitudinal fronts which, set back at the north and south terminals, is stripped down at its sides creating an overall image of a skeleton, drawing down the old features and breaking them down. In the background of the great reading hall, there is "die grosse fracht" by Ansel Kiefer. In the central high gallery with its multilevel lateral areas, the key space for natural ventilation, the tree and the stretch of water are the symbols of the project's sustainability. In the vaults of the roof 26 large double-skin steel "sun chimneys" - the source of natural light in deeper areas - permits a natural and "hybrid" ventilation of the building: the external air flows into the lower areas through the vents owing to the natural difference in pressure.

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 16-19

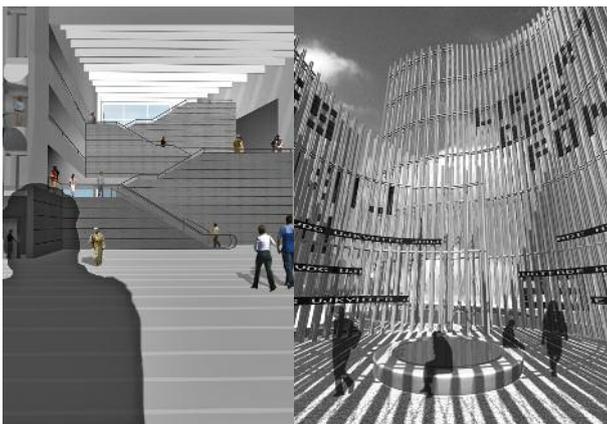
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 - project 22



Building in Cremona Old Town

The first objective of any project is adding quality to the city: this project intends to be a fragment of the context from which it draws its roots and in which it develops. Particular notice is given to the adjacent squares which will have the functions of "market square" and "meeting square": with precise constraints, the design of relations with these spaces is clear in its internal circulation, in the ways in which the different parts are permeated by flows. Towards the "meeting square" a great crystal wall bends and stands back from the front. The image dematerializes, moves towards the interior, enhances the relation between interior and exterior. The complex internal space, clearly expressed in the "world garden", participates in the square's design. The exterior enters the interior, materializing the flooring of the hall and of the course reaching the upper levels, almost an urban street which, by rising, connects the shops and the spaces of the playground.

- M. Pisani, Pica Ciamarra Associati / Fragments, L'Arca - I Talenti 2003, pp. 72-75, www.pcainet.eu



Algiers, Arab-South American Library

The announcement for competition asked for the image of the library to express a unique and recognizable place, a hinge between two different cultures and civilizations. At the entrance, a propeller contains the text of the Brasilia Declaration written in all the languages of the Arab and South American world: information technology permits changing the message over time. The library's design expresses the sense of the contact between different civilizations which did not know each other during millennia, but which share an interest in astronomy. The project contains a dynamic view – a synthesis at highway speed – and a wealth of close-up views. It is based on the idea of scale typical of pre-Columbian cultures. The spaces are distributed around a court: water, oasis, marks of Islamic architecture. From the sky (memory of the old Nazca marks) the building seems a laying animal, with the back towards the highway of which it refuses sense and noise, while its eyes are attracted by the city centre and the sea. From the standpoint of sustainability, the project proposes management economies (energy and water), tends to improve the quality of life (health and comfort) and to reduce pollution (air, water, noise). The building characterizes landscape, the climatic value of the envelope, close and transparent at the same time, natural ventilation, visual and acoustic comfort; gardens (Arab and South American Countries share a "Mediterranean climate") fit in preserving the existing trees.

c. The medium scale

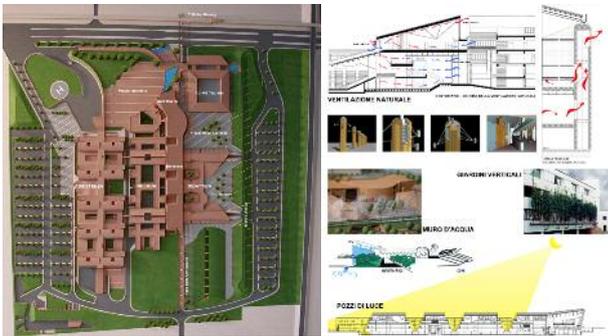
c.1. built complexes



Naples, Bagnoli – the Science City

Opposite the island of Nisida, it covers 7 hectares in the huge decommissioned 19th century industrial area. In the 250 m. crossing it, via Coroglio widens out as much as possible. The south terminal is overpassed by curtains of vines and is a first aperture to the sea. The northern terminal is prospectively marked by a pedestrian path, with high stays and a square overlooking the sea. Between the two "gates" the flooring is in basalt, between jeux d'eau and special lighting. The complex – accessible from the sea – includes a course along the "gates of knowledge", by Dani Caravan, leading to the Museum close to the old chimney: a "virtual periscope" having at its basis the "hole in the world", the illusion of seeing the antipodes, according to an idea by Fred Forest. With a strong contact with the sea, in a substantial continuity of the roofing's sequence of perspectives – into which some "prostheses" are inserted with different technologies and lights - the project opposes to these sequences the sculptural layout of the ground, with sloping planes and enveloping internal paths, almost a "Moebius Strip" along which the visitor walks without any discontinuity, rather with continuously different perspectives. The continuity of the interior is characterized by a set of elements: the Planetarium, the terrace steps facilitating group communication; the "water wall" separating the area of temporary exhibitions and introducing a particular sound environment. The complex is marked by breaks along its margins. The Museum of the Human Body, with an IMAX cinema, is under construction. Among the bio-climatic principles adopted by the project: appropriate materials, recovery of rain water (watering, non drinkable circuit, anti-fire reserves, fountains and sound effects), design of green spaces, system of natural and hybrid ventilation.

- Pica Ciamarra Associati / Eteronomia dell'Architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 8-13
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – project 17
- M. Pisani, Pica Ciamarra Associati / Città della Scienza and Other Works, Liguori, 2003



Caserta - Faculty of Medicine and Surgery

The project envisages spaces for research, teaching and assistance and brings different urban activities into the university area, suggesting strong connections with the surrounding spaces. A system of orthogonal paths produces a continuous multi-level fabric, around patios, through the access from the medium level to minimize distances and to stress the compactness of the complex. The spaces for assistance have pitched roofs and vertical gardens on their facades. The main gallery for students coincides with the Roman "centuriatio": in this gallery, in the library and in the hall the natural ventilation system is sufficient in spring and autumn as well as in the greatest part of summer and winter. The buildings are connected to the park by terrace steps for sunbathing. The "water wall" and the trees arrangement are strong elements in re-designing the landscape and protect against environmental micropollution.

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 26-27
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – project 19

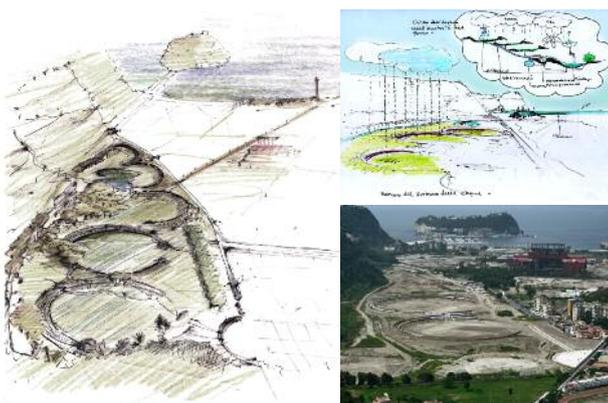
c.2. open spaces



Naples - Square in Fuorigrotta

Facing the Istituto Motori of C.N.R. (deriving from a competition in the '80s and stressing the principles of flexibility, growth and the use of water and sun in energy logics) the new Square defines a particular place of identity by a mix of different materials. Western gate of the city, characterized by a wooden flooring in the triangular space, is crossed by little water streams starting from the great fountain/terrace steps, visually linked to the one of the Istituto Motori and integrated in the systems of the underground park area. At the vertices of the triangular space, the three towers are made of different materials. The Tower of Time and Fluids, in lamellar wood, traces a sundial on the square's floor. It includes wind operated sound machines and a rigid sail, a screen for laser beams which start from the summit of the Memory Tower: it is the symbol of the environmental and ecological care of the project. The Information Tower is in aluminium: it is a support to the "cabling" system of the city and goes through the evolution of the information technology systems. Satellite dishes and a large screen are connected by optical fibre cables to the Radio TV centre and to the monitors present in the area; at its basis, a drum with revolving inscriptions and a touch-screen direct access system supply information on the life of the district and of the city. The Memory Tower, in stone and iron, is a great periscope through which the sea and the old city centre can be seen: television cameras explore its interior where, over time, sculptures and bas-reliefs with the history of the city will be visible. At the margin of the triangular area, there is an olfactory labyrinth, a garden collecting the typical species of the Mediterranean scrub and the trees existing before the area's transformation

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 24-27
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – project 10-15

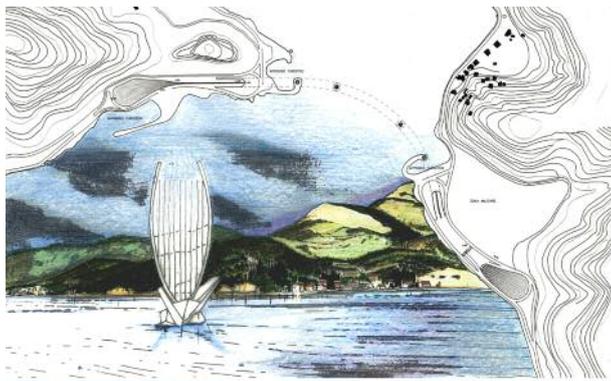


Naples / Bagnoli – Sports Park

The project concerns 35 hectares close to the Posillipo ridge, redesigned with great attention to landscape and environment features in a sequence of "craters" on which the continuous cycle-pedestrian pathway develops. The sustainable character of the project highlights the objective of highest efficiency, best maintenance, lowest management costs: the craters, circular spaces flat inside, make reference to the volcanic nature of the place, creating green spaces which become part of the landscape and a connection between the Posillipo ridge and the plain; they redesign the area in a recognizable geometry, with rich and thick plants on the terraces. They include the spaces for facilities and services. Water, besides its symbolic and evocative meaning, is the element of landscape fascination and attraction, as structuring as the craters, with a biological function for the reconstruction of the Biotope. The way of using it and enjoying of it – thanks to its biological contribution to the park's life and to its ecological meaning – suggests the design of water in three places: the canal, at the basis of the ridge for the collection of drainage, in a humid area covered by typical plants; the rock fountain; the bio-lake, collecting the water drained from sport courses; the water-proof surface, devoted to skating, to jeux d'eau and its possible physical states, such as ice during the winter.

- Pica Ciamarra Associati / Eteronomia dell'architettura, Quaderni di architettura naturale, year II n° 5/2009, pp. 14-15
- A.I. Lima, Pica Ciamarra Associati, Iaca Book 2012 – project 26

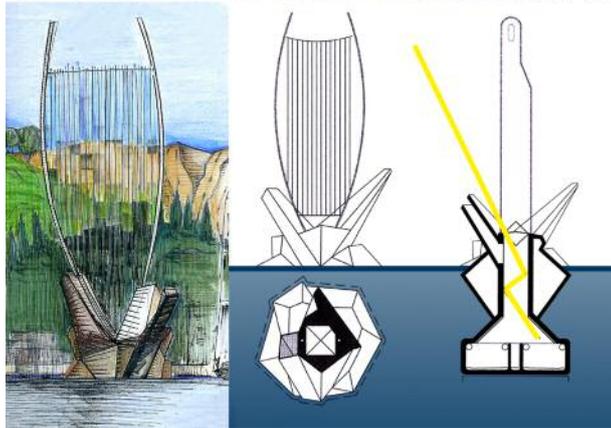
a. La scala urbana



Montenegro – Bocche del Cattaro

In Kotor Bay, according to P.B. Shelley one of the pearls of the universe, a crossing is envisaged between two points of tourist and commercial interest. The proposal suggests a submarine tunnel, resting on piers at mid depth, which continues in underground tunnels up to the high arrival level. The junctions with the existing roads are an opportunity to redesign the coast and to create tourist moorings. The crossing is marked by two ventilation and lighting pipes, two “sun chimneys” appearing as big floating sea monsters; a lighthouse signals the crossing and projects light and laser beams on the surrounding hills; an “Aeolian harp” is reminiscent of the ancient musical instrument – operated by wind – whose sound will be comparable to the siren song heard by Ulysses during his mythical journey.

- www.pcaint.eu/works/sustainability



Genoa – Parodi Bridge

The project was beaten in an invitation contest for the transformation of an out of use wharf. In a continuum with the original spaces, a system of urban squares intertwines with community activity spaces, many of them at a submarine level. The morphology of levels and activities, above and below the surface, give people in the Square a vertical sense of unexpected meanings and perceptions. The idea of square is re-interpreted, drawing from the planimetric view the idea of a multi-dimension outlook towards centrality. The space gives the feeling of being in the barycentre of a complex system. Jeux d'eau which seem to melt with the sea produce sensations of coolness and a resounding environment. The different typological features of the spaces surrounding the Square evoke different presences at the different times of the day. On the sea, the Square breaks the terminal with big dark rocks accompanying the view towards the water. A network of steel cables – up to over 20 m.– supports instruments stressing the sensitivity of the place to winds: north wind, northwest wind, south-west wind and sirocco, diffusing different sounds in the air. The sound structure is composed by 3 Aeolian harps and by 4 copper pipes reminiscent of transverse flutes: large kevlar sails, operated by a wind rudder, channel air into the huge flute, which gives out sounds similar to the harp's.

A sequence of stratifications characterize the materials used in the square: the sea makes reference to the water of upper fountains; the stones diversify light; the trees unify images at a high scale; wind, in the interplay between green, water and stone, expresses the sound element; metals appear in roofings. For deep spaces, natural ventilation pipes and “sun chimneys” are strongly integrated in the structure.

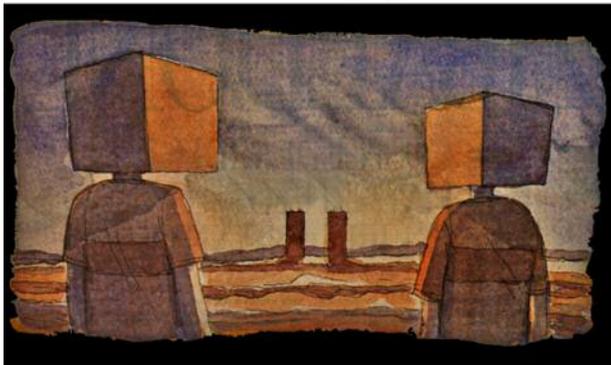
- M.Pisani, Pica Ciamarra Associati / Fragments, L'Arca – I Talenti 2003, pp 76-81

- www.pcaint.eu





eteronomia : "condizione di ciò che non ha in sé la causa e le leggi del proprio svolgersi, ma le riceve dall'esterno"



4 In short, I am looking for a perspective for the process which started with the rude awakening produced by the epoch-making 1973 energy crisis, which put an end to dissipative architecture and brought about a new more careful and inclusive way of reading the buildings of the past.

Those who in those years had not been overcome by mainstream trends – the ones who affirmed the autonomy of architecture and who gradually degenerated coming to the post-modern stage – set themselves to “the search for lost opportunities”. They rediscovered old principles, progressively refined from the cave era with scarce resources and handed down technologies. Reflection on such principles gave new momentum to the currents of thought which opposed the heteronomy of architecture to the creed in autonomy.

Giancarlo De Carlo’s synthesis was extraordinarily strong: *“I believe in the heteronomy of architecture, in its necessary dependence on the circumstances producing it, in its intrinsic need of being in tune with history, with the events and with the expectations of each person and of social groups, with the arcane rhythms of Nature”*, a position which finds its roots in Team X to which each of us owe much.

Believing and experimenting heteronomy enhances the value of relations. The ecological challenge urges us to favour the relations between things, leading thus to a substantial change because where relations are dominant individual objects lose importance, almost to their annihilation. That is why, after the era of separation, of direct answers, of the myth of autonomy and simplification, banishing any form of rigid sectionalization, the era of integration, of heteronomy, of complexity as a value, of apopheny as continuous tendency towards interrelation logics tends to affirm itself.

Scanning the future, in eight years in Europe the new buildings will have to be zero energy; in eighteen years they will have to produce more than they consume. In the meantime, social organization and population’s age ranges, jobs and leisure time, habits and behaviour will all change.

For a long time there have been formal commitments for the gradual abatement of greenhouse gases, but – as Federico Butera remarks – much glass is still used in buildings to give them lightness and transparency: *“a lightness weighing thousands, millions of tons of CO2; a transparency reducing the atmospheric one, strengthening greenhouse effect. Transparency and lightness hiding the huge weight of machines, pipes, raceways to keep decent environmental conditions”*.

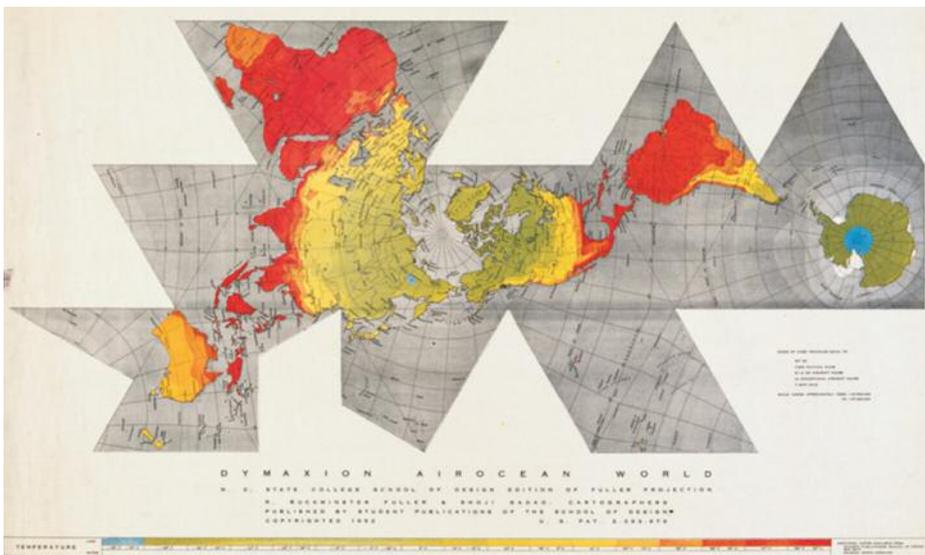
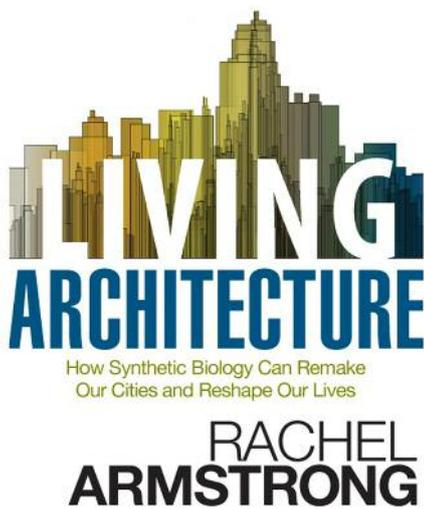


Sustainability is a concept, not a formula, hence it is open up to future pojections. It has been rediscovered as a “message in the bottle”; has won a central role late, but rapidly; it has become an unavoidable issue. It has introduced substantial viewpoints which originated at the dawn of the human adventure and were taken until resources were limited; but were forgotten by a rich world which believed in limitless development and in technologies able to give immediate, individual, partial responses, unaware of their large scale consequences.

In the processes of transformation of the living environment, many different experiences presently materialize criteria aimed to cut consumption, or better, to meet current needs with minimum energy use and then by resorting to renewable energy sources. On different scales, demand is revised by reflecting on the very meaning of needs: the idea of de-growth is discussed. At the same time, new criteria and devices are experienced first to limit CO2 production and then to absorb it. Designing in “sustainable” terms does not mean settling down into so-called natural principles or waiting for the self-generating proto-cells prophesied by Rachel Armstrong, the British biologist: it is mandatory also with present technologies.

Mankind is part and parcel of nature: it is a distinguishable entity, unique but not special or distinct. Nature is regulated by the laws that man gradually discovers, which put in new relations and interact one with another. Human intelligence – among the highest expressions of nature and of its evolution – makes the accumulation of knowledge possible and it is therefore at the basis of sustainability.

In the last decades, after the short but meaningful “search for lost opportunities”, it was clear that sustainability is a strong ally for a better quality of the living environment. “Sustainability sustains architecture” because it contributes to shift the attention of individual projects to relation logics: the need for super-individuality denies selfishness and by enlarging evaluation parametres goes beyond what is only measurable, perhaps going also beyond sustainability. Buckminster Fuller maintained that: “*You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete*”.



Buckminster Fuller, Dymaxion Map