urban design/landscape architecture/sustainable design
at the Università Iuav di Venezia

19 theses of the Graduate Programme in Architecture

Architectures and Sustainable Design

The constant deep change in the contemporary society and environment needs to experiment a relational concept of architecture open to a large range of interaction with different disciplinary interests, in the fields of art, geographic and environmental sciences, social and economic sciences, different cultures of design activity (art, architectural landscape design and planning). It implies too a large elasticity in meeting and using different and intertwined scales. The Università Iuav di Venezia has an interesting potential in this sense, cause its mission to be an integrated platform for the design studies in the art, industrial, architectural and urban design (for this reason its present goal in its new Statute is to be an integrated University of Design). Besides, in the context of the present social and economic crisis, the evaluation of architecture as theoretical expression and as knowledge process, i.e. as a field of humanities, seems to me a fundamental tool of criticism in respect of a world dominated by a culture of profit. This consideration implies a difficult re-definition of the research contents of our discipline in the framework of the historical hybridity among polytechnic artistic and humanistic issues. In this sense it is very important to conceive an architecture of relations and not simply an architecture of objects, i.e. to study the role of architecture in a wider geographical, historical, social context and in a wider multidisciplinary context, to use architecture as a tool of knowledge and design intervention on the spatial, physical and social transformation of the environment.

For this reason the new concepts of Landscape (according the European Landscape Convention’s wide definition) and of Sustainability (applied not only to the building techniques but also to the urban and environmental design issues) have integrated in our recent experience the more traditional interest for the relationship of architecture with the urban transformation processes.

And to the classical objectivity of architectural construction we have preferred to approach the dynamic, mobile, changeable nature of the transformation processes of the city and the environment and to adapt the architectural design tools themselves to this change scenarios.

The three master classes entitled “Urban Design”, “Landscape Architecture”, “Sustainable Design” documented in the present exhibition (the other two master courses are entitled “Building Technology” and “Conservation”) are mainly devoted to an approach of building and restoration design (has produced in the last eight years at the Università Iuav di Venezia a wide range of research experiences leading to innovative answers to the complexity of architectural and urban issues in the contemporary society, renewing the old tradition of our school in the relationship between architecture and city founded particularly in the Sixties of the 20th century with the seminal studies by Giuseppe Samonà, Aldo Rossi, Carlo Aymonino, Giancarlo De Carlo, Vittorio Gregotti and other important Italian scholars.

The main results of these experiences on an international framework are collected in the series of conferences entitled Dessiner sur l’herbe, published by Il Poligrafo, Padua, and by Quodlibet, Macerata, in the book Scenotage per il progetto sostenibile, published by Marsilio, Venezia, in the several theoretical contributions collected by the Iuav School of Doctorate, and in the peculiar international summer workshops organized every year by the Faculty of Architecture of the Università Iuav di Venezia, published by Marsilio, Venezia.

Start a discussion on this theme with the contribution of dozens and dozens of schools of Architecture, compare aims, strategies and educational tools offered to adapt teaching methods to physical, social and economic changes in place in our countries appear very appropriate in the historical moment marked by crisis and major changes.

In that event, besides other schools invited, the Faculty of Architecture of the Università Iuav di Venezia decided to contribute by presenting some theses of the Graduate Programme in Architecture (tracks: “Urban Design”, “Landscape Architecture” and “Sustainable Design”). The projects presented at the exhibition allow to construct a small and partial retrospective vision of the work made with the senior year students, starting a critical reading of the results achieved through that interweaving of didactics, project research and theoretical production that always characterizes our Faculty, to emphasize the adequacy of present themes of some of the research projects underway at the Università Iuav di Venezia.

The nineteen theses published in the following pages contain echoes of the researches conducted at Iuav, the specificity of approach related to studies made in various research units of our university. Certainly different in methodological approach, these theses are similar in terms of attention focused on the uniqueness of the places and on assuming the project as the primary tool to study cities and landscapes.

The themes of the projects demonstrate how the Università Iuav di Venezia measures itself, also by means of its theses, with the necessities expressed by the relevant transformations of the cities and the demands of contemporary living.

Among the theses carried out in this direction, I could mention those conducted, on the sprawling city and the urbanised countryside, on the reorganization of the existent infrastructures systems, on the abandon industrial plants, on the relationship among architecture, water and topography, on processes of re-naturalization of fluvial parks, on sustainable tourism, on the sustainability based on the use of local and cheap materials, on producing energy and self-sustaining energy system, on policy of urban densification, on sustainable residential settlements and cohousing.

These theses do not show the certainties of executive drawings, but rather, with their dialogue-stimulating intention, the relations they have been able to create with the specificity of the places and the life lived in them. I believe that these projects express clear lines of research aimed at identifying the questions and interdisciplinary appropriate approaches for the deep change in the contemporary society.

The topics of the following theses, as well as the different approaches of individual authors, seem to suggest, as a whole, that the project’s architecture, with its various scales, can be understood both as a tool to learn about the world of today and a means to improve tomorrow’s, the expression of a judgement on how the countries and cities are today and on how they could be.

In relation to these evaluations, training of architects of the future generations can only appear decisive.
Venice, utopia and archetype of the waterscape city, the title of an almost unknown essays by Italo Calvino, is a perfect synthesis of what define the complexity of the “water city”. A reflection on this issue represents an opportunity to define a methodological strategy. In this way the research correspond to a process, rather than a project, based on a deep reflection around the city: Venice, a city for the future, a proper model of urban creativeness.

The work moves from two clear hypothesis: show urban planning and architecture as lasting and simple objects and build a relation between tradition and new proposals. The project is a way to redefine the site of intervention, under the influence of memory and history. The composition method works as an “infinite evolutionary process”, in which the context is seen as unfinished and open to future additions or modifications. Themes, scales and techniques have to constantly intersect and cross each other, following their own logics and dynamics. Therefore the ability to look beyond the mere physical buildings came to be essential. The aim of this process is finally to read the Venetian lagoon through Piazzale Roma and viceversa, hence showing the ambition of realising a territorial wide-ranging project. The first approach to the site deals with its physical experience and with a deep study of the past and present dynamics. The composition of a “virtual plan” through different insertions of “capricci”, suggests a possible solution for unsolved problems: an useful example able to clarify a foggy idea of “city”. This process gets contributions in a theoretical way, from the ones of Ludovico Quaroni and Saverio Muratori, Le Corbusier and Frank Lloyd Wright, and more over from Eugenio Miozzi and Gianugo Polesello.

The new system of cartography created, overlapped with the existing one, reveals an original portrait of the infrastructural system. With specific consultings, the transport system that currently supports the lagoon and the mainland is rethought. The boundary created by the water gets more consistency, thanks to a new way of fixing centratilies. Taking Piazzale Roma as a central suburb, a kind of “inferia”, a series of concentric perimeters are plotted out. The areas marked become the site for an intellectual reflection. In this way Piazzale Roma brings back a typical venetian character: the pedestrian city.

Questioning resources, speed, the way of arriving in the city, its changeable state, accessibility, users (with an excellent photographic documentation by Enrico Rizzato) leads to a proper solution: Piazzale Roma becomes a market place. The intention is to design an authentic architecture, with a total coincidence between structure and architecture. A multi-layered soil without backs, in which the use of vertical connection allowed reflections on a vertical public space (well represented by the complex of Rialto bridge).

The proposal for the new market intents to create a clear order of paths, boundaries, knots and architectural landmarks. It includes cultural spaces, commercial services and information points and aims, with a new definition of the infrastructural system, to take the complex role of a social catalyst.
The Venetian Lagoon is endangered by the presence of the industrial zone of Porto Marghera which is the most polluted area in Italy (Law 426/1998). The continual polluting industrial activity generates conflicts for territory development as regards: the inability of industry to bring itself up-to-date in comparison to the productive levels of environmental sustainability today; the closing of many productive sectors with the consequent drop in employment; the process of urbanization that interests the industrial areas; the presence in the lagoon of huge environmental and cultural resources; the international tourist interest which impact around Venetian lagoon economy. Such a conflict gives evidence to the necessity of reconverting the entire system of Porto Marghera through an "urban project", able to solve the existing problems as to evaluate the natural and cultural characteristics of the lagoon, in alternative to the actual transformations regarding individual works that are not coordinated each other. The port, the railway and road infrastructures which link the many historic towns of the territory and the international ones, put Venice in the middle of the Veneto metropolitan system. In this context, Porto Marghera is an area that has complete structural characteristics that has chance to activating strategies of development for the entire Veneto territory: for the new disposition of the existing territorial infrastructures, to attract entrepreneurs and new investments, to create additional value by recuperating the natural resources. Porto Marghera has got dimensions and settlement characteristics similar to some contemporary cities of particular environmental attraction (Dubai, Chicago, etc.). In these urban realities the processes of modernization that have taken place, need conditions to develop the most varied productive re-creational and residential activities, that find life in the well-balanced relationship between the way of living and the use of the natural resources. This project proposes a reorganization of the exisent infrastructural systems: canals, streets, railways, greenery and buildings, where the mobility linked between land and water becomes a specific aspect. Proposals are: the moving of the commercial port and of the railway to the south area, so as not to meddle with the use of the most central urban areas; the connection of the urban viability that joins the many areas now-a-days isolated, in order to continue mobility of the public and private road transports; the opening of the new canals for an efficient flow of the water and a more widespread net of lagoon mobility; the opening of green corridors which cross the urban facades and link the equipped areas between land and water; the definition of an urban nets which defines the dimensions of the buildings as regards the public and private uses of an urban area. Furthermore, the following aspects, assume specific meanings: the planned, natural islands, which create the new urban facade of the lagoon; the building facades over the water for direct access to the buildings from the water; the quays as preferential landscape ways for the pedestrians; the wet docks as places of attraction for the organization of public activities. These planning choices summarize the project strategies capable of reaching the proposed aim: "the water city". In conclusion, Porto Marghera, placed in the middle of the metropolitan urban system between land and water, for its high potential, is able to offer housing models of great interest for the urban veneto culture, compete with the most contemporary urban innovative experiences and answer to international requests that have historical Venice city as point of reference.
Asunción, the capital city of Paraguay is situated along the banks of a lagoon on the river that gives the name to the Country in the centre of South America. The reasons of the existence and development of this city depend on the peculiar geographical and historical features of those slow waters: firstly used as a refuge-harbour from where the expeditions sailed to found important cities such as Buenos Aires, Corrientes and Santa Fe, and secondly the big development of the city in the surrounding areas according the common mode of the big South American cities, which makes Asunción a medium sized metropolis, fixed together with all the surrounding municipalities.

Thinking of Asunción as a metropolitan system means thinking of the project as a pre-figuration of another reality, which is done with existing resources, that are ingredients for a new possible scenery. According to the economic and geographic means of Asunción, the project can be possible only in the way of reuse, related to a new meaning and change of existing goods. The urban project correlates in a new way three existing systems, that summarize the aspirations of this city that grows up from the river but has always to face the sprawl of its territorial development. The project, considering the future changes is linked to the building of a part of the highway called "Costanera", and defines the new accessibility to downtown and its relationship with the river. The red way represents a project planned by the city's institutions: the way of the Bus Rapid Transport, a system of buses on preferential lane so much flexible and a wide variety of applications. This system is being introduced in a lot of big South American cities thanks to its flexibility and economic advantages. The yellow way constitutes the formal definition of a public transport through the river: it converts a system of private boats and little informal harbours just existing in a official system, that improves the development of the city through the river, not a borderline but a way of connection, not a confine but a place of the city. The blue way is formed with two elements that define a footpath through the city: the first one constitutes an important urban and historical element: the old railway, the first urban railway of South America. The second one is the security line from the overflows, that in the high and rocky part of Asunción defines a new way though the border line of the river, where now we can find only old and abandon industrial plants, and other places informally occupied. The place where those three urban elements cross themselves is the architectonic project that is an infrastructure that relates the three urban once, a new meeting place between land and water able to relate the different heights of the three urban ways. There is a land project that emphasise the possibility of interchange, able to second the spaces of the river due to a green areas on the borderline. A public forecourt overarch by a catenary dome built with many similar elements such as commons tyrants for a pitched roof that work very well in tense state and are very easy to find. This roof defines the space character, the relationship with the landscape and the necessary architecture, the space of shade. The third element contains the functional program link to the three urban system and the culture of the river. It is a large structure that want to disengage most of water area using a constructing system of prefabricated elements that is normally use for bridges, allowing the interchange with any level of the river. Its large figure retrieves the earthly city to the river, restores the city with his river and produces a new significative landmark. It defines an original landscape because restores the initial relation between urban and natural states by restoring the condition of them origin.

1 Plan of the town centre of Asunción with its most important institutions and the project area (the last on the left)
2 View of the building from the Paraguay River
3 Axonometric cutaway and axonometric view
4 View of the forecourt from the entrance of the footpath
One of the most important and emblematic phenomena of our time is the definitive urbanization of the cities and the countries. Cities and metropolitan areas which, in that part of the world, not so long ago, were rural and poor, today grow up quickly.

Lima, the "Ciudad de los Reyes", colonial city founded in 1535, has already reached the size of a Latin American megalopolis, and it’s the only South American capital that overlooks the ocean, although it’s separated from the beach by the cliffs, called barranco, up to 80 meters high above sea level. This peculiar configuration derives from an excess development, because Lima wasn’t born as a port city, but far from the sea, on an upland; from this introversion comes the difficult relation between the city and the ocean.

To avoid the coast, seventeen km long, remaining a physical limit, it is necessary to increase the value of the transversal dimension, creating new access ways to the sea and new sociality and cohesion spaces, in order for Lima to not stay an "urban rear" anymore, but to become an important system of transportation and essential resource for a sustainable development which also takes care of the future territorial realities.

The project is born with the goal of connecting the city and the ocean through an hybrid architectural organism composed by a footbridge, a mechanical lift and pedestrian stairs, and public services at the feet and on the top of the barranco and a residential building.

The footbridge crosses the highway and pierces the cliff and surfaces from the barranco’s facade with a stairs and elevators system favoring the ocean view. The principal square access passes through a half hypogeal way connected to the lift. The buildings with social function like the library, the cultural centre and the café lean out of the meeting place; they are built in the lower level of the principal street on the top of the cliff to have a better acoustic and visual protection from continuous and chaotic city traffic. The public buildings were projected through a process of subtraction from the cliff and are characterized by a tectonic look obtained by the use of concrete. The residential building, nine floors high, presents various living typologies to permit the exchanges among different social and economical classes. The collective dwelling is the only building that emerges above the barranco, with a rarefaction nature made of light materials like steel and glass. These horizontal systems will allow the recuperation of abandoned and not exploited areas.

Regarding the public transports, the project includes the installation of a net of maritime transports to connect all the Costa Verde from the Callao Municipality in the north of the coast to the Chorrillos district, in the south, by ferryboat, to reduce highway traffic and to support more sustainable public transports.

The words of Le Corbusier pronounced in 1929 at a Buenos Aires’ conference best describe and represent this project: “Imagine myself on a steamship’s fore, with all the passengers, emigrants included, who finally touch the promise land. With a crayon stroke I mark an infinity line made of lights, with the same crayon I draw the skyscrapers aligned on a impressional front, spouting out lights”. The Costa Verde can become, with a project plan, a very important element for the city thanks to the introduction of a pedestrian walk system or a bike path and the creation of a public space in the poor zone at the top and at the feet of the cliff. The Costa Verde has to become the attractor pole of the city in the future with no distinction between high and low social classes.

1 Project plan
2 Project model with the relation between barranco and the buildings
3 Project view from the public space at the barranco’s feet
4 Axonometric explode of the project. From the top: vegetation, project buildings, park with pedestrian way, lift and footbridge, physical context
5 Cross section intercepting the library space, the semi hypogeal way and the cliff

imagine myself on a steamship’s fore, with all the passengers, emigrants included, who finally touch the promise land. With a crayon stroke I mark an infinity line made of lights, with the same crayon I draw the skyscrapers aligned on a impressional front, spouting out lights”. The Costa Verde can become, with a project plan, a very important element for the city thanks to the introduction of a pedestrian walk system or a bike path and the creation of a public space in the poor zone at the top and at the feet of the cliff. The Costa Verde has to become the attractor pole of the city in the future with no distinction between high and low social classes.
The Collective Dimension of Living: a Project of Social Housing and Cohousing in Marghera

Thesis of the Graduate Programme in Architecture, Track “Urban Design”
Università Iuav di Venezia
30.03.2010

Author: Andrea Calgarotto
Supervisor: Eleonora Mantese
Assistant Supervisors: Cristiana Eusepi, Ugo Rossi, Francesco Steffinlongo

The urban site under study is the “gar-den-city” of Marghera (near Venice), a residential area built at the beginning of ‘900 for the workers of the adjacent industrial port. The project area is placed in line with the civic center of the neighbor-hood and close to the underground pedestrian walkway which extends beyond the railroad tracks next to the area, connecting Marghera and the city of Mestre. The existing civic center, built in place of a wide boulevard laid the origi-nal master plan, extends along the enti-re neighborhood and includes a library, the town hall, a church, one cinema and public gardens. In the northern part of the project area there is the highway that leads to the bridge to Venice, while in the western part there is a high densi-ty residential district. Nowadays the area is totally abandoned and doesn’t have a specific destination. The project objectives are: to continue and conclude the civic center of the dis-trict that currently doesn’t have an effec-tive architectural conclusion; to promote sustainable residential settlements from social and environmental point of view, to connect the area to the surrounding city, to promote the connection between the civic center of Marghera and the ur-ban area of Mestre.

The strategies of the project include: a social housing operation, a cohousing operation; the design of common facili-ties for residents; the design of a park that can connect together the various operations and these operations to the surrounding city. One long court characterized by an irregular shape, a second more regular court and a thin tower are the elements that contains the different accommodations. The main court is an extension of the civic center and welcomes social housing, the resi-dential tower is a new landmark for the entire district closing the north side of the main courtyard. The common facili-ties are located in the northern area, between the tower and the highway, they can be considered as islands in an archipelago situated in a public park. The islands are connected by a tree lined street and they are surrounded by large trees that build an urban forest. The included services are: a new square for the existing church, a nursery, a playground, vegetable gardens, a football field and parking area where different local events (markets, etc.) can take place. In the se-cond court, smaller and more regular, there is a cohousing, object of study by the architectural point of view. The term cohousing means a particular form of neighborhood in which private housing and self-managed communal services are combined in order to safeguard the privacy of each family, but at the same time to encourage spontaneous prozes-ses of socialization and cooperation between the inhabitants. In the project, the residences are located on the borders of the intervention, they form three sides of the court and protect the open space in which common services are located. The services volumes, very loosely arranged in the space of the court, are characteri-zed by original shapes, bright colons and different coating materials. The services for the residents of the community inclu-de: a large living room, a relax area (with gym and spa), a library, a dining room, a kitchen, a children room, a greenhouse, a workshop, a laundry, a bike parking and an underground garage. The houses are very flexible and able to adapt easily to the needs of families, through internal changes and small additions. From the structural point of view, the project of buildings (with the exception of under-ground spaces and of the volume that contains the living room, both made of concrete) involves the use of cross-la-minated timbers covered with artificial stone slabs or concrete panels.
The project's idea was born from a personal experience of collaboration during the summer 2009 for the organization of an exhibition of contemporary art with the Venetian gallery ARTLIFEfortheworld. The exhibition consisted in the setting of environmental art works made by different European artists, called to offer their lagoon environmental's point of view, specifically in the island of Sant'Erasmo and on its water surfaces.

The Venice’s lagoon is a fragile territory, in which the human being has destroyed part of its environment, through industrial constructions and little control of its resources. The lagoon landscape is constantly changing, and the possibility of different uses of its islands could become the key strategy for its surviving.

The project issue's beginning is focused on a preliminary analysis about the phenomena that affect the reality of Venice, such as mass tourism and the system that manages the space for contemporary art, to understand the possible future scenarios and to find an answer upon the delicate situation of collective spaces' overload of these last years.

The Biennale Organization with the Municipality of Venice offer to the various National Exhibitions the possibility to show themselves in a wide open spread system between buildings, courts, museums and cultural centers linked all together.

Based on this comparison's results, we propose a REVERSE of the current trend by shifting the focus from the center to the closest islands, where you can get different spaces and situations from the traditional way of living Art in Venice.

Therefore, the system remains the same, like a spaces' diffusion just to emphasize the unique characteristic of the territory: an archipelago.

The proposal seeks to combine the public space's requirement wanted by the inhabitants, with the opportunity to make the islands more "close and friendly", incorporating them into an attractive constant circuit and to suggest a possible re-use or integration in the cultural phenomena that is an important part of the city life.

The project is designed as a "bridge system" between two very different contexts, the city and the more natural neighboring territory, made by a "new water way route" that connects the city center through the islands of Certosa, Le Vigne and Sant’Erasmo, till to Trerporte. During this "trip" we follow different scenarios, ending in Sant’Erasmo where the water way becomes a ground path, connecting different zones, and translates the concept of the Bank of the canal, which is the important "sign" and "archetipo" of this territory. This path is like a link between the rural native system of the island and the introduction of new art spaces, as an Integrated System that can support both activities.

The path leads the visitor through the island, visually and physically, connecting the richest areas where there are the specific crops for which the island is famous. Several farms operate on the island, some of them have close contacts with the city, going to Venice, but nowadays few of them sell their products directly to the consumers on the island.

The project aims to be a new point of contact between consumers, trade visitors, and sustainable art tourism. The path is made by spaces for selling, meeting, catering, and showing environmental art exhibition, in order to discover the potential and the compatibility of the combined use, of "food" and "art activities".

The key feature of the project is to promote a "slow tourism" discovering the environmental works located on the island as a "wonderland exhibition" giving the chance to enjoy art and food in the same time, and on the other hand to understand the relationship between people and the use of an agricultural land that – even though so close to Venice – seems to be so far away...
Iuav: 107

Legnago 2050.
A Center a Mile Long.
The Adige River as the Backbone of the City
Thesis of the Graduate Programme in Architecture, Track "Landscape Architecture"
Università Iuav di Venezia
28.07.2011
Authors: Federica Crestani,
Silvia Bortolato
Supervisor: Enrico Fontanari
Assistant Supervisor: Renato Bocchi

This 1,600-meter long urban intervention – inspiring the project’s title “The one-mile city center” – proposes the requalification of the landscape axis formed by the Adige river which, by 2050, will transform the river banks crossing the city of Legnago into a fluvial park which will act as a backbone for the urban system. This natural element will be the new city center and will enact a fundamental role as the element that will bring together the existing historic center and the smaller fraction of Porto. The latter is at present a residential neighborhood as all the services are currently located more towards the city central core. From this point of view the landscape represents not only the binding element for the river banks but for all the green systems dotted around the city and is a gluing base for all those functions that are directly linked to the urban network emphasizing the social spaces along the Adige. The Park can, in fact, be conceptually represented as a controlling system that creates four sub-systems integrated into the urban framework:

1. The city’s Gate to create a better vision of the different accesses where the project includes several receptive areas.
2. The Historic City, creating new squares that act as filters to connect the revitalized historic center to the park.
3. Art and Culture Areas, to provide the city of Legnago with new quality the park is equipped with open-space exhibition grounds which are connected to the existing museum.
4. The Double Landscape which through the creation of a new residential complex will allow a new way to live and enjoy the landscape.

Furthermore to be able to deal with the social changes that are today presented by modern families – recent demographic studies have shown how the growing rate of the family nucleus is far higher than the population growing rate – the apartments can accommodate any typology of residential need: through the use of internal modular prefabricated walls the internal space can be altered to create more bedrooms to allow any typology to reach a 100% saturation level. The same can be seen on the buildings themselves as not all apartments are supposed to exist from the very beginning. These spaces can be used as common social areas until the need for more habitable space arises. This strategy, here quickly illustrated, wants to be a sort of solution for the typical soil consumption that is seen in rural areas of the Venetian countryside and aims to be a new way of living in the landscape preserving the human need par excellence, and the harmonic relationship with the landscape dimension.

1. General plan
2. View of the residences
3. Design patterns
4. Front view and typologies of the residences
The project for the new House of Music in Vienna draws its inspiration from an international competition which asked for the redesign of the northern portion of the Stadtpark in Vienna.

The Stadtpark is a formal park designed in 1862 in the style of an English romantic garden to complement the project for the development of the inner city held in 1858. Vienna was to get rid of its fortified structures and create a new center where the old military walls and trenches were to be replaced by the Ringstrasse, an elegant circular street enclosing and redefining the historic center.

The Stadtpark is limited, on its western side, by the Ringstrasse and is then split in two parts by the Wien canal. The southern side of the park is characterized by a series of buildings and monument: the Kursalon, a large ballroom hall built in 1865, the famous statue of Johann Strauss and the monumental entrance and walkway along the canal.

The design of the House of Music needs to be a link between the past of Vienna and its future. Its spaces must be able to communicate new tendencies in classical music through a rich cultural program also extending its influences along the four corners of the park and through the whole city.

The project will be an element, a visual element, that will inevitably modify the perception that people have of the park, its landscape and its surrounding. It will be an experience affecting the students attending the school, the people coming to its concert and quite simply all the passers-by which will be confronted with a new construction interacting with a well known landscape.

Starting from the existing geometry forming the park, where a series of well defined round green islands are carefully placed to create passages, walkways and niches where a number of sculptures are placed, the geometry for the new House of Music works in stark contrast but continuous dialogue. Tracing the axes that connect the outer urban landscape with the inner forms of the park and calculating the necessary land plots for the required square meters necessary to allow the House of Music program, the project works with a resulting triangular geometry.

These triangles are then partially raised and interconnected according to their orientation and function, creating a dynamic landscape where some of them become simple land infills and some start to create a built hierarchy. All of them are nevertheless in continuous dialogue between themselves and the space around them and there is not randomness in the way they are placed but almost a symphony where the strings left by the original park geometry are reinvented and replayed through a different theme.

To maintain a balance between the existing park, its features and the new landscape, only one third of the given plot could be built whereas the rest had to remain and be perceived as a piece of the Stadtpark.

The project aim is to create not only an integration between the new buildings and the existing park but also to recreate the relationship between the side of the park facing the Wien canal. As this relationship was initially created by the different levels of the park itself, the river walkway and the canal, there is now a stronger interaction between these elements: part of the retaining wall separating the park from the canal has now become a facade of the House of Music.

Different windows at different heights – some directly above the canal and some others at higher points of view – allow the users to enjoy these changes in levels and the complexity of the site from a different angle. The result, wants to be a way to show how new buildings in historic urban situations can be designed to interact and be strongly affected by the existing conditions around them. Also to demonstrate that harmony and integration can be reached by strong contrasts with the existing thus forcing even the casual observer to breathe in and understand the historic and the modern, working together in a new harmony.
River Po is flowing through the most populated and most urbanized area of Italy. Urban sprawl stretching from Venice to Milano, draining for extensive agricultural use and engineering interventions on embankment and riverbed have restrained natural river floodplain to the relatively small land strip and changed river morphology by restraining natural processes of periodically creating parallel flows and flooding alluvial plain.

The research area is situated in the central part of the Po Drainage Basin where the river morphology is dominated by meanders. Today fluvial landscape is dominated by poplar growing and gravel pits. Areas once rich in wetlands and forests today have become extremely poor in landscape features and biodiversity.

Project aims to restore river’s naturality increasing biodiversity and sustainability of the landscape, improving ecological connectivity trough creating new wetlands, where possible restoring abandoned gravel pits, and creating vegetation ecological corridors throughout the floodplain. The main two actors of the project are two natural systems that are highly depending on each other: Vegetation and water are running parallel and intersecting from time to time. Vegetation follows the water flow creating riparian bands in proximity to the riverbanks and in the floodplain it’s spontaneously created around the wetlands. But the vegetation doesn’t only follow the superficial water flow, it also reflects the groundwater. What seems to be a completely flat plain in reality hides small relief differences that, depending on the water level, create flooded or dry areas.

But the ground also contains the history of the water and sediment movements that can be read in the soil layers and are responsible for the drainage qualities that are related to the vegetation. By studying historical documentation it was possible to draw the map of the old river morphology and comparison it to the actual river flow shows the pauperization of river landscape.

Project provides small changes in the water system. Main river flow of Po remains unaltered. The series of small wetlands, created recovering the former Crostolina creek, are to be connected in the new creek running parallel to the main Po river. The former gravel pits are transformed into large water basins and their border section is transformed into soft slopes to give habitat for aquatic plants such as for example *Marsilea quadrifolia*, now completely extinct. Other wetlands are periodically created as a result of the normal water activity. The main vegetation system is divided into four different forest patterns used in the project: riparian forest pattern containing mainly *Populus alba*, *Populus nigra* and *Salix alba*, is already existing in the near proximity of the main river flow and are areas that are flooded regularly. The second riparian forest containing *Euonymus europaeus*, *Sambucus nigra*, *Ligustrum vulgare*, is second in the proximity to the water. The planital forest pattern containing mostly *Alnus glutinosa*, *Ulmus minor*, *Prunus avium* and *Fraxinus oxycarpa* and consolidated plain forest pattern dominated by *Quercus robur* are to be found on the higher and rarely flooded soil. These four forests are “running” trough whole area and are dimensioned by minimum required for maintaining ecological function. Different patterns are planted in different areas depending on the water presence and drainage which are in relation to the soil composition that river has created moving its sediments. The new landscape is result of design of the old river morphology that now reemerges as the vegetation system.

The goal of designing and staging of ecological improvements that can be understood and enjoyed by the inhabitants of the city’s at the border of the floodplain is enhanced by introducing recreational and education functions to permit them to reestablished the relationship with the river that once was of great importance.
The Cast and the Capsule.
Remaking Landscape in the Context of Sile River

Thesis of the Graduate Programme in Architecture, Track “Urban Design”
Università Iuav di Venezia
27/10/2011
Author: Alessandra Marron
Supervisor: Laura Zampieri
Assistant Supervisor: Paolo Cecc, Maria Chiara Tosi

“Each year I confront a new generation of graduate students, secure in their excellence, incipient or confirmed professionals in one or another of the planning or design fields. My most important objectives in this first encounter are to challenge professional myopia, exclusively man-centered views, to initiate considerations on relations and contrasts between man and nature marking a fragile territory: the basin of the Sile river.

The Sile runs between the Piave and the Brenta river and is known for being a resurgence river, for its relation with the historic centre of Treviso and its natural Park. The first approach of the research aims to verify if the river’s biological system can be ‘encapsulated’ into the Sile Park, which protects spring areas and most part of the land crossed by its water body. Although, on a deeper analysis the eco-balance results to be connected to a larger cast of actors. In fact the system composed by underground and superficial waters, keeping in life the Sile river is more complex. The exact calculation of the river’s supplies is determined not only by springs waters but also by industrial waste waters and by the irrigation network which has been serving Treviso high plain for 500 years.

Beyond the frailties analysis of these hidden and sometimes underestimated systems, this research aims to highlight some relevant transformations. Current or planned urban operations involve the territory of the Sile’s catchment area: gradual interruptions and relocations of production activities inside the park’s protected areas, programmed and progressive conversion of the existing irrigation system into drop irrigation leading to the dismantling of the entire irrigation network; moreover, the creation of new infrastructures as Superstrada Pedemontana Veneta and Terraglio Est, the intense extraction activity in the high plain and the waterboard’s proposal for the re-use of some of the dry gravel-pits as peak storage and aquifer recharge basins. These important and controversial operations are linked to some crucial questions connected to the delicate theme of the fluvial ecosystem. Some of the research proposals in fact reflect on different topics: how to reintegrate these operations in the environment, how to reclaim the future vacant areas, how to contrast the possible desertification of the high plain and lastly, how to make the waterboard’s program sustainable. The aim of this research is to show how these exclusively man-centered projects can reconsider the place of man in nature, trying to combine the needs of the dispersed territory with the creation of new landscapes.

A particular area has been considered as an ideal place to show how it is possible to give a concrete answer to some of the raised questions. The project concerns the reclaim of an active mining area where the Superstrada Pedemontana Veneta winds its way through, offering the opportunity of a direct access. This area demonstrates that it is feasible to give back to the community those spaces otherwise definitely subtracted to nature and man.

Different actors and resources are involved in this operation, concerning various aspects such as the soil project, the roads system, the hydraulic network and the vegetation system which underlines the important role of the intervention in the environment.

Finally the hypothesis of a biomass plant responds only partially to the energy requirements of the waterboard, integrating itself in the context as an experience and access device to a new landscape.
Mestre is an evident example of the palimpseste theory. Its territory is a straightforward result of the interplay of settlement, infrastructural and environmental systems. Within this interaction, the purpose of this work is to insert a stadium, that represents a strongly appealing centrality, in a Mestre residual space, left behind by the city’s expansion.

What are the consequences, what the opportunities?

Despite the proximity to inhabited places, the centers of attraction (airport, malls, port, etc.) are reachable mainly by the big arterial roads, the overcrowded tangenziale above all, and the railway system. These overlocal infrastructures deny the settlement and environmental local systems, dividing the city into independent and unconnected areas.

What is the role of the stadium in such scenario?

Since it will attract users from regional territory, the stadium obviously will be connected to the national road and railway networks. The challenge now is to bind the stadium to the existing urban fabric, improving accessibility and letting Mestre be a complete city.

The stadium is first of all an environmental machine, a part of the open space system dealt within the same manner as the other parts.

The urban location and the integration in the open space system lead to a new idea of stadium. This work rejects the stadium as a mere wrap of a sport event, focused only on usability and safety requirements. The new stadium is an open box whose conception is born from the outside taking the materials and the shapes from the landscape wherein it is placed. The stadium is first of all an environmental machine, a part of the open space system dealt within the same manner as the other parts.

The project depends on the following three elements: working with topography, which is the basis for the the design of the whole park, wherein the stadium is placed; the usage of vegetation and woodlands to define and demarcate the space, which is also the fundamental component of the ecological corridor along the river Marzenego; the relationship with the water, an ever present and disturbing element.

Belonging the environmental system along the Marzenego requires the interaction of the stadium with water and vegetation. These are to be interpreted first as active players in the continuous ecological corridor and second as devices able to define space, shape and design of the park.

Water and vegetation are linked by a common element, the ground. The process of shaping the ground depends completely on both the rules of the functioning of the environmental system (such as hydraulic control and green structure), and the accessibility conditions that define paths and practicable areas.

This work is far from dealing with the stadium as an isolated architectural object. The project handles the design of the stadium through diverse scales and disciplines, having as a starting point a relationship impossible to disentangle between architecture, city planning and landscape, and considering the stadium itself as a result of this interplay.

The Forest in the Stadium
Thesis of the Graduate Programme in Architecture, Track "Landscape Architecture" 
Università Iuav di Venezia
29.10.2008
Author: Lorenzo Majer
Supervisor: Paolo Ceccon
Assistant Supervisors: Enrico Fontanari, João Nunes
The Lagoon of Venice in the Context of Climate Change. Between Artifice and Nature: the New Cruise Station Project in Fusina

Thesis of the Graduate Programme in Architecture, Track "Sustainable Architecture"
Università Iuav di Venezia
28.07.2011

Authors: Chiara Gerotto, Valentina Pavan
Supervisor: Stefano Rocchetto
Assistant Supervisors: Antonella Cecchi, Luca Cecchinato, Matteo Guardini

The project of the new Venice cruise terminal shows itself as the answer to constant growth of the cruise sector and meet the real request for more space than the ones of the actual "Stazione Marittima", order not to lose the traffic of the ship of last generation (length greater than 360 m).

The localization in Fusina of the new terminal refers to a scenery that defines the situation of the Venice lagoon in the 2100: it considers the influence of the MoSE system on water traffic (according to studies, it should be in about 700 times/year, obstructing the passage of ships for 56,5% of hours per year) and the presence of a series of re-design operations of the lagoon waterfront, realized, approved or under study (the logistic platform of "Autostrade del Mare", the Fusina terminal, the "Vallone Moranzani", the Pagnan dock, the phytoremediation park on land reclamation A, the completion of Padova-Venezia waterway and the whole system of saltmarshes and naturalistic oasis on land reclamation B-D/E).

Based on all this, the idea of transformation in the long term requires a concentration of productive and logistics activities in Porto Marghera (to avoid Venice to becoming definitely a theme park and not a city) and the construction of a port off-shore (hypothesis already presented by the Venice Port Authority), connected with the hinterland by an infrastructure that travels along the edge of the reclaimed areas. In this view is inserted the new Venice cruise station project.

With the goal of hosting the largest number of ships with minimal occupation of the soil, we arrived at a design solution that can accommodate up to 12 ships at the same time and with one terminal can handle the flow of passengers loading/unloading of 6 ships at the same time, without them going to cross.

In a building of such importance, the theme of the structure assumes a certain importance as it becomes an element by which it determines the shape of this architecture. The choice of a particular type of pillar, that go to support the Vierendeel beams, has achieved the purpose intended (minimum consumption of soil), emptying the ground attack and getting a basin of water inside the building, that can be used for the arrival of the means of transport, such as ferries and water taxis; moreover this structure allows the closure of the northern front that houses the store and the opening, with the pillars point system, towards the natural oasis in the south.

At first floor level, we have the passengers disembarkation level with the baggage claim area and on the second floor, the passengers embarkation level, both characterized by a mirror image of functions in the plant, which allows the closure of part of the building and its partial operation in less busy periods of the year.

The choice to release as much as possible the ground attack led to locate parking (partly covered by photovoltaic shelters) in the roof, where there is also a system of conference rooms and a green prac-ticable "terrace" with pedestrian paths, which looks into the natural landscape of salt marshes and nature reserves.

Considering the engineer system, the terminal is also equipped with a cogeneration system (4 gas engines of the size of 1 MW eachone) that can simultaneously produce heat and electricity for the terminal and the ships docked in port, which can then turn off the engines, reducing emissions of CO2 and other pollutants and canceling noise, which is an important factor considering the proximity to nature reserves of the reclaimed areas.
Imidugudu and New Social Training Spaces
Thesis of the Graduate Programme in Architecture, Track “Sustainable Architecture”
Università IUAV di Venezia
28.03.2011
Authors: Alberto Bergamo, Alice Tasca
Supervisor: Esther Giani
Assistant Supervisors: Matteo Guardini, Fabio Peron

The project originates from the journey and work in Rwanda in 2010, developed with the support of the venetian Claudio Buziol Foundation’s fellowship, in collaboration with Club Soroptimist of San Marino. Through this experience we aimed to study the local use of wood and earth as construction techniques. The three months stay allowed us to visit the entire country, to get in touch with locals, learn and analyze vernacular architecture and constructive techniques, and moreover to experience Rwandan lifestyle. The culture and lifestyle was the most challenging aspect we had to face in our learning process: in Rwanda most of the lifetime is spent outdoor and all the infrastructures are tightly linked to nature, seasons, sun and earth resources.

Our Project takes place in a newly built Imidugudu: five years ago, the Rwandan government planned the building of rural agglomerations designed and built following occidental constructive techniques-concrete and corrugated metal sheets. These poorly designed housing programs were an answer to the appearence of slums created by the poorest part of the population on the edges of the city. The Imidugudu are planned only with an electricity and water network, but without private gardens or public spaces.

Our selective intervention on an existing agglomeration aims to create localized infrastructure that: allow rainwater to be collected for domestic and farming reuse; redefine public and social spaces by creating shadow corners for relaxing, and covered open air spaces to filter public and private flows. The project is conceived as an addition to an existing structure and envisages the use of vernacular materials and techniques. Drywalls, caged stones, banana and avocado tree planting (beside of being a good resource of food) the trees provide shadows and prevent from the leaching of the soil) the replacing of existing roofs to improve indoor and acoustic comfort and the use of traditional construction techniques are the key points of the project.

The project area is situated on the lakefront in the Nyanza suburbs, crucial crossroads between Kigali and Butare. In addition to Imidugudu village redesign, we decided to design a brand new training centre on the lakefront. Created around a kiln as a main facility, the production of pottery but also of bricks will allow the self-construction of the centre. The training centre consists of a permanent unit built with cooked bricks (collection tanks and storm water runoff), the rest of the center is made of modular units and can be build, extended according to the development and growth of the centre during the years. These modules are made of eucalyptus and coffee wood, metal corrugated sheets for the roofs and wattle and daub wall plug (eucalyptus wood and earth).

The sustainability of the project is based on the following principles: local, cheap and easy to find materials; self-constructionability; technical crafts; recovery of rainwater; flexible spaces; exploitation of wind draft and sun; use of organic, recycled/recyclable materials; vegetation so used to solve soil washout, shadow, food and wood availability. We had the opportunity to test the compression resistance of the abode at the Kigali Institute of Science and Technology. Using different compound – earth with grass, sand and water in different amounts – we understood which was the more suitable (35 kg/cm²).

Once back in Italy we tested the cutting and compression resistance for the coffee wood joints. The strength has been proved at Laboratorio Tecnico Lombardo di Brescia, and resulted much bigger than any expectation: cutting resistance 194 kg/cm², compression resistance 441 kg/cm².

1 Picture of the settlement, Umudugudu
2 Selective interventions on each existing house
3 Modular unit: eucalyptus wood, coffee wood, earth, corrugated iron
4 Section of the water collector
5 View of the public area
6 Section of the retaining wall
Urukundo: Improving and Protecting the Informal City in Rwanda
Thesis of the Graduate Programme in Architecture, Track “Sustainable Architecture”
Università Iuav di Venezia
28.03.2011
Authors: Lucia Fanetti Zamboni, Riccardo Valsesia
Supervisor: Esther Giani
Assistant Supervisors: Matteo Guardini, Fabio Peron

The decision of developing our final project on a site in Rwanda was born during our participation to an international workshop organized by our Università Iuav di Venezia and the KIST of Kigali held in September 2010 in Rwanda. During this month we worked together with Rwandan students making a research on urban and rural settlements typologies in that country. We did lots of site visits and interviews, and we collected several important documents concerning governmental development plans and actual situation analysis.

Rwanda’s population is growing day by day, the density is already high and the urbanization phenomenon is growing without any plan. As a result, in the major cities there are a lot of informal settlements without any service or infrastructure. At the same time, the government is trying to put order and planning by relocating the people living in the informal city in new residential areas often far away from the centre of the city. The areas previously occupied by informal quarters are subsequently interested by commercial and speculative projects.

We decided to focus on an informal neighborhood situated on one of the hill in the north part of Kigali, called Urukundo. On the edge of the hill there are some new governmental and institutional buildings. Those activities attract a lot of speculative interests in the area and consequently part of the neighborhood has already been demolished.

The initial analysis took us to the identification of the main needs and the major qualities of Urukundo. The neighborhood is lively and enriched by a small clay cooperative in which some of the inhabitants work. We decided to maintain the informal identity of the neighborhood and to propose a way to improve the existing conditions in order to guarantee its survival.

First of all we focused on the improvements of the conditions of the main road that crosses the area from the top of the hill to the valley at the bottom. Currently the road is a dirt road, subjected during the rain season to a big phenomenon of erosion.

To prevent this phenomenon we decided to create a packed ground road, with a system of rainwater collecting canals on the sides. The canals can at the same time collect the water to preserve the condition of the road and to reuse it for daily activities, watering and for public services after going through a system of sand filtration in covered basin.

Inserting new activities and services, and concentrating them along the road were the key elements of the project. Along the road we designed small buildings that could have different functions. Some of them could be use for public services (electricity, toilets, washhouse, waste collection, etc.) and other as small businesses. Every building works independently and together with the other ones creating a network of services easily accessible by all the inhabitants of the neighbourhood.

The goal was to propose such activities that may remain in the territory and can provide jobs and additional value to the local situation, thus acting as a driving force for a possible future transformation of the neighborhood. In the empty spaces along the road we proposed public places that included buildings designed for learning or community activities.

In the valley we implemented the existing clay cooperative by creating a small factory that uses the clay-rich soil of the valley to produce and sell construction materials, initially used to build the elements of our project, and artisanal products.

Our project was a test, an experimentation of the possible answers to the problems identified in the area by the observation of their needs and their way of life. Furthermore, we were very keen on using local materials, local technologies and local construction systems.

The goal of our project was to improve the current situation by consolidating the public spaces with their already existing activities, but also by adding some basic but vital infrastructures and some equipped spaces.
"Rêdunes": Retraining and Re-Naturalization of the Dune System of the Lido of Venice
Thesis of the Graduate Programme in Architecture, Track “Sustainable Architecture”
Università Iuav di Venezia
29.03.2011
Authors: Gloria Gallimberti, Deborah Stocco
Supervisor: Esther Giani
Assistant Supervisors: Fabio Peron, Valeria Tatano

The aim of this project is to re-qualify the sand dunes area which is located in the northern part of the island of Lido (Venice area). In order to modify such a characteristic and sensitive zone, it has been decided to start from a process of re-naturalization of the area to preserve and protect the natural environment. Moreover, some accommodation facilities were carefully placed to allow the cohabitation of visitors and natural environment. The starting point was to use the existing natural grid in order to draw a new artificial grid. This artificial grid links all the facilities in a continuous and organic network and forms spaces which are suitable for the placement of a basic module. It will be then possible to divide such a basic module in different sub-modules or secondary modules to organise several activities. Several types of nodes were realised at the junctions of the existing natural pathways: every node is different from each other and makes walking in the park an interesting and pleasant experience. All the facilities which are placed along the pathways were designed as a single piece or an assembly. Every piece recalls old traditions of Venice area and characteristic artifacts (e.g. bricole, dama). The project has a low environmental impact, since it is an easy assembling, dry system (e.g. chemical toilets) and most of the used materials is recycled (e.g. bricole, palancole, chiatte, plastic materials). The pathways on the solid ground are combined with pathways on the water, where there are some resting areas under the sun. According to the ancient Venice area tradition, some closed pools were created directly in the sea. These pools allow the visitors to have a safe and exclusive bath in the Venice lagoon. These facilities have a low environmental impact as well (e.g. floating systems which are dry anchored, chiatte which are used as bathtub). The entire ensemble is self-sustaining energy system, which uses the solar and wind energy: photovoltaic systems, on the remaining part of the project can be then realised step by step, since every element of the system is linked to each other but keeps its own independence.

1 Master plan of the area and definition of the use of design elements
2 Areal view of San Nicolò project area
3 Swimming pool
4 Infopoint pavilion
5 Chiringuito pavilion
“Studia Sava”. Redevelopment of a Former Industrial Area in Fusina
Thesis of the Graduate Programme in Architecture, Track “Sustainable Architecture”
Università Iuav di Venezia
28.07.2011
Authors: Paola Perozzo, Paola Sprea
Supervisor: Esther Giani
Assistant Supervisors: Fabio Peron, Valeria Tatano

Studia. Studia is the Latin word for the first English universities that were born in the Middle Ages within the religious environment, where student housing could be found.

Sava – Former Alluminium Factory. The area extends for 35 hectares and it is bounded by Via dei Cantieri, Via dell’Elettronica and Via Moranzani, overlooking the Venice lagoon. The buildings we decided to refurbish are those that once hosted the kilns and the alumina silos. Kilns building: Ø 582 m x h 23 m x 8,5 m. Divided into 6 blocks: 4 of them are made up of 10 spans, another one of 6 spans and the last one of 11 spans. Reinforced concrete trestles form the basement which in the past used to support the tanks for electrolysis. The upper structure has 65 steel portals, each consisting of two pillars connected by a 2,5 m high truss and by beams similar to IPE 160, on which vertical wall plugs were fixed. Alumina silos: Ø 23 m x h 34 m.

The structure is made up with bricks and concrete; the ground floor is divided into 8 sections, connected with a single outer corridor. The first floor has a central area surrounded by eight side rooms in correspondence to the hall below. The rest of the building is a completely empty area 26 m high, where alumina was stocked.

Preliminary Analisys. The starting point was to assess the demand for beds, through Ministry of Education data and information directly collected in the field with a questionnaire distributed to students. The results confirmed the necessity to improve the students’ quality of life, providing a structure equipped with common facilities responding to their needs. We therefore identified the Sava area as the most suitable for this function, since it is located in the mainland at a very short distance from Venice.

We have therefore designed the Sava area as the most suitable for this function, since it is located in the mainland at a very short distance from Venice. Our purpose is to show the social and cultural potential of a former industrial area that can constitute an asset for the whole community, leaving economic reasons aside for once. The project fits into the wider design of Venice administration to convert the entire district of Marghera, breaking its industrial boundaries and rediscovering the natural landscape.

Our Project. Our intention is to design a large park that hosts a big garage, a student housing system and common areas.

The large garage located to the north is an infrastructure to support the university campus and the Venice-Fusina connection. The garage is hidden under the last portion of the park, which reaches the height of 9,5 m. The three-levels car park is divided into four segments. The building presents hollows for light and ventilation, provided with vegetation, at each parking row.

The two-fold student housing system (small apartments and rooms with shared facilities) are semicircular in order to combine the best orientation for energy consumption with the kilns building. The common areas located within the kilns building are used as gym, library, exhibition space, restaurant and market. The strategies adopted to design them are similar in all blocks, although the functions are different. Mobile walls, in fact, are inserted in the basement in order to make space variations according to users’ needs. The upper floors, instead, have been fragmented in small units to translate industrial spaces into human scale. We gave great importance to the kilns building axis, the only straight landmark in the park. It is the hub of the area: its extremity overlooking the lagoon culminates with a lantern on the water visible from Venice, while the one toward the mainland crumbles in a series of holm oak trees rows, only evergreen essence in the whole park.

The rest of the park is designed with tall trees and shrubs, planted in parallel rows to the kilns building. The sinuosity of the constructions we conceived is between the linearity of the industrial buildings and the winding nature represented by the Brenta Canal, as well as by ghebi (small natural canals),barene (land plans typical of lagoons, periodically submerged by tides) and lagoon valleys.

1 Plan and vegetation
2 Student housing
3 Former kilns building constructive section
4 Garage
5 Seafront
Moranzani Valley is a strip of land spreading on the dismissed area of Marghera portual district. This area is 3 km wide and connects the heads (upper limit) of Malcontenta in the North-West with Fusina in the South-East. The main difficulty with the site recovery was to connect different urban areas to each other and harmonize them despite their opposite features.

The sites contradictions require some considerations on the macro scale level. Moranzani’s Valley in fact is the buffer zone between the Northern industrial landscape, dominated by a skyline made of factory and port towers, and the Southern rural Venetian hinterland, characterized by its total flatness. Different design approaches are needed to deal with such different areas. At first glance none of the environmental elements seems worth stimulating our iconographic interest, since the whole landscape appears as abandoned and totally disconnected from the context. The project is meant to connect these opposite urban environments by creating a self-sufficient park as regards energy/electricity. The purely industrial features of the Valley highlight some issues such as electricity pylons crossing the whole linear development. Almost all the extension of Moranzani’s Valley is characterized by the presence of many power lines, high voltage pylons and other tangible signs of human presence through the landscape.

All these elements require careful consideration to be used for architectural purpose. The project aims to reclaim an area about 3 km x 250 m wide and with an elongated morphology by pouring 2 millions cubic meters of sludge/mud out. Sludge/mud properties in fact allow to remove pollutants such the contaminated soil that affects the industrial district of Porto Marghera. Both the Northern and Southern side of the area are bordered by important urban arteries. A lower hierarchy of roads defines the geometry of area in the south and grants access to various industrial complexes situated on the North of Porto Marghera. The southern border is defined by the water system of the Brenta River, while in the north we have to deal with the petrochemical port system, which presents a more extended water surface.

The investigations made on the local climate of Venice, let us understand and accurately predict the influence of the different weather agents working in the site. The analysis of microclimatic factors became the benchmark for the compositional choices and the design of the park, so that even the layout of the green areas, the elevation profile and the terrain orography have been influenced by it.

The project include the diversification of pedestrian ways, bicycle paths on different levels and carriagable driveways on different strategic points, along the multi-functional complex located in different spots of the park. Because of the large surface of the area, a high altitude road system had been included to cross the whole park in a quick way; the cable system has 4 stations, two head and two intermediate. This let us to recover the existing pylons and re-use them as a support for the cable car.

The project aims to the energetic self-sufficiency of the entire architectural intervention and to the reduction in the emission of warming gases and pollution in the atmosphere. This possibility is given thanks to a system that produces energy from renewables. It combines electricity and thermal energy by using some algal species typical of Venetian lagoon, cultivated in open (open-pounds) and closed systems (photobioreactors). Both the systems are present in the project. This solution succeeded in showing that it is possible to reduce emissions by being at the same time self-sufficient from the energetic point of view.
Defrag City. Strategies for Veneto Diffuse Metropolis
Thesis of the Graduate Programme in Architecture, Track “Sustainable Architecture”
Università Iuav di Venezia
26.10.2009
Authors: Francesco Lanza, Simone Visentin
Supervisors: Benno Albrecht, Mauro Fratte, Ermesto Antonini, Luigi Schibuola

The metropolitan region located in Veneto Central Area represents the subject of the dissertation. This urban entity, already settled, that could be described through a low-density and autotopic geography, broke once for all the thresholds between town and unbuilt areas, creating a continuous, unbounded settlement. Our proposal aims at containing the process of metropolis development ("metropolisation") through an efficient combination of built (diffuse metropolis) and unbuilt spaces (agricultural or natural landscapes).

We suggest considering the “weak belly” of Veneto Central Area as the energy heart of the region instead of a space infinitely available for building purpose. Referring to the concept of short supply chain, we fix a max distance (70 km) from the localities of energy production to their site of energy consumption. The redefinition of spatial hierarchies must be necessarily conceived as a gradual process: a different regional structure can only come from a concatenation of local transformations. The most promising strategy appears to be the cogeneration, spread over the territory, increasable with time. Small-sized plants (lower than 1MWe), provided with micro-turbines and absorption heat pumps, would be able to convert biogas (obtained through anaerobic digestion of biomass) into thermal and electrical energy. Main fields of applications: city cars, power and lighting, heating and cooling plants of buildings.

The proposed “organism” is conceived to fight typical problems of diffuse metropolis, like wide and unlimited sprawl, soil impermeability, small and poor public spaces, plenty of infrastructures, piping and wiring, low density and land consumption.

So the transitional and unsettled ridge between urban and rural worlds is the best location, in terms of efficiency, for the proposed spatial system, that could exploit the resources offered by the first (growing energy) and the last (organic waste), linking again those two complementary situations.

The system is composed by three elements: the power station, an aggregation of housing and/or working cells and several public facilities.

The balance, in terms of energetic autonomy, reflects the self-containing nature of the system: thus the entireness of undamaged agricultural and natural landscapes will be ensured. If exceeding the amount of resources needed to feed it, no addiction or extension is allowed. Any new building will be counterbalanced by an area (representing the “ecological footprint” of the building) obligatory to preserve from construction.

Habitat itself stands for an “energy infrastructure”. The building site conceived for these types of architecture expects easy carrying and quick assembling of pre-cast components. The “base-element” of this urban system, dimensionally fixed and replicable, consists of Glued Laminated Timber beams, assembled to form a “trestle” and a suspended secondary structure.

The same structural system allows the composition of several figures, enabling design of different settlements and landscapes, well-defined in terms of urban quality, instead of provisional, fragile and undefined boundaries. We believe in the possibility of adjusting and improving the structure of diffuse metropolis: putting up a fight against mono-functional and fractured clusters, we suggest to “defragment” urban components, i.e. to reorganize them, following a new paradigm: unobtrusive and sustainable energy supply. The success of the operation will be ensured by combining spaces with different nature and different scale, but also used by various stakeholders: finally, habitat will appear complex and full of opportunities for any kind of user.

1 Self-containing system: any building counterbalanced by an area preserved from construction, ensuring the entireness of undamaged agricultural and natural landscapes
2 Eco-efficient location: habitat as energy link between rural and urban spaces
3 Habitat as energy infrastructure from biomass, through digestion and cogeneration, to thermal/electrical usages
4 View of public spaces and the housing/working system from an aerial walkway
5 Construction scheme: easy carrying and quick assembling of pre-cast components to form a “trestle” and a suspended secondary structure
6 Cross-section through habitat showing the aggregation of housing/working cells (top) and public facilities (ground) linked by energy duct.
Legend:
- red: new buildings
- blue: existing buildings
- gray: empty land

The block is no more seen as a single unit but as a collection inside a bigger urban fabric. The relationship with the rules in the social space becomes a serious and strict scientific path, this is the base for a practical demonstration that (in the context of the actual regulations) "works" to show the energetic, social and quantitative benefits that can derive from it.

Project in a small territory portion in Mestre (Venice) and adjacent. The new blocks are inserted in respect to the precedent and subsequent ones. The new is revealed and appears new in the volume and in the shape.

Working mainly on a quantitative range there is the possibility to deepen even more focusing on small territory portion (5/2 ha), moving away from its characteristics: the green spaces, the yard, etc. changing those peculiar elements that enclosed big changing opportunities.

The postwar fabric shows interesting values (Kw/mq.k). This analysis leads to observe as the new block: the street is no more a simple mean but as a collection inside a bigger urban fabric..." (S. Munarin e M. Tosi, Tracce di città: Esplorazioni di un territorio abitato / area Veneto, F. Angel, Milano, 2001, p. 20).

New and existing buildings help each other, interrupted, separated from spaces not occupied: pieces of empty land, natural areas or patchy urban fabric...

In particular it shows the real mutation in the volume and in the shape of the entire block; both for the old and new buildings, gaining from what is done in this way it lower even more the consumption of energy saving, in this way it lower even more the consumption of energy saving.

It occupies a maximum largeness of 5 mt and lean on the North wall of the building, in this way it lower even more the dispersion of the existing house, giving a better energy consumption. The block is no more saw as a single unit but as a collection inside a bigger urban draw: the street is no more a simple mean of movement but a new form of cross and social space.

The relationship with the rules in the Italian civil law system (third book) on the real estate proprieties about the distances (openings of entrances) shows the feasibility of the densification project.

In particular it shows the real mutation that increment the living space and the shape of the entire block, both for the old and new buildings, gaining from what took off a +40% of surface. New and existing buildings help each other. Through the density principle, as indicated by the rules of adaptation and transformation...