

LIGNANO SABBIADORO

Between sky and sea



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Graphics and layout: Michelangela Scrocco

Print: Lithostampa, Pasian di Prato

© Società Filologica Friulana - Udine, 2014
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ISBN 978-88-7636-194-4

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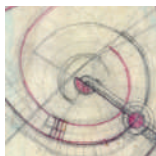
edited by

Massimo Bortolotti

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URBAN PLANNING AND ARCHITECTURE OF THE SPIRAL CITY. THE PROJECTS BY MARCELLO D'OLIVO FOR LIGNANO PINETA

DIANA BARILLARI

“In a very cold night of May, my body stuffed around with newspapers, in a slow and half empty train I ventured from Milan to Trieste. Architect Marcello D’Olivo had designed a city. He was eager to look at his papers and run to the places where already the first teams of workers, in the thick of the young pine forest, were digging trenches, planting poles, grinding concrete, after the first road had been happily covered with the first tape of asphalt [...] On a rainy and windy Sunday, as if inside a chapter of a novel by Svevo or Hemingway, we hurried towards Monfalcone, Aquileia, and then Latisana, and soon after we took the road that led us into our little jungle, the woods of Pineta, where a group of pioneers had entrusted to Marcello D’Olivo the task of studying the layout of a holiday city, to be built between the Tagliamento river, the trees and the sea. A city surrounded by small dunes of golden sand. (L. Sinisgalli 1954, 37)

So Leonardo Sinisgalli in his article *A town was born between trees and waters*, published in “Civiltà delle Macchine” (Civilisation of Machines) in 1954 describes a visit to the new city being built in the pine forest of Lignano, where the Architect Marcello D’Olivo takes him on a tour, after having accompanied him on the construction site of

the Villaggio del Fanciullo (Village of the Child) in Opicina. The title of the article recalls a famous novel by Ernest Hemingway, *Across the river and into the trees*, set between Veneto and Friuli in a still untouched lagoon landscape, where in the eyes of poet engineer Sinisgalli the pine forest is transformed into a jungle, feeding the founding myth of the new seaside town, which is celebrated with the epic intonation so congenial to the American writer. What in the eyes of modern environmental culture is considered a questionable intervention, for Sinisgalli assumes the lyrical tones of a foundation tale, where the plough that digs the furrow for the walls is replaced by excavating machines and teams of workers who open the road that, as a seal of transformation, will be covered with asphalt. The shareholders of the Lignano Pineta company, founded in 1952 in order to develop the land just purchased, are romantically transfigured into a group of pioneers intent on bringing civilization to the jungle of Lignano. The emphasis, however, is not merely an exercise in style, nor a man of culture sensitive and attentive like Sinisgalli could indulge in a bombastic eulogy. In fact, the description of the undertaking captures



Marcello D'Olivo with Leonardo Sinigalli in Lignano, 1960.

his admiration for a project steeped in innovation and courage, where like in ancient times man faces and wins over hostile and fierce natural elements, thanks to technical superiority. Hemingway is a perfect testimonial for Lignano, because in these areas of north-eastern Italy he will set two famous novels – *Farewell to Arms* and *Across the river and into the trees* – in which the autobiographical story serves as a trigger for the plot and the stories of the protagonists. But America is not simply a literary evocation, it is part of the historical and cultural context of the area. In fact, in the years in which the project is implemented in Lignano Pineta, a few kilometres away the city of Trieste and its territory – the so-called zone A- are run by the Allied Military Government (until November 1954). Here, in 1950, D’Olivo begins to create the Villaggio del Fanciullo (Village of the Child), the work that makes him known in Italy but also abroad, and it is enough to read only the titles of two articles published in 1952 – one by Lacorazza, *Between Wright and Nervi* published in the magazine “Pirelli” and *Free architectures on the heels of Wright* on “Domus” – to dispel any doubts about the inclusion in the Italian organic architecture movement. This trend, which has its tireless coryphaeus in Bruno Zevi, develops between Veneto and Friuli, radiating from the IUAV where some of the teachers are strong supporters of Wright, Zevi, Giuseppe Samonà and Carlo Scarpa and where many brilliant students like Angelo Masieri, Gino and Fernanda Valle, Bruno Morassutti, Edoardo Gellner, Gianni Avon, Maria Antonietta Cester Toso, in addition to D’Olivo do their studies. The Italian tour done by Wright in 1951 is still memorable (M.Casciato

2002 R. Martinis 2008, F.Canali 2012). In addition to Florence, which hosts his great personal exhibition, the architect makes a stop in Rome and Venice. It is not known if D’Olivo has the opportunity to visit the exhibition or attend the ceremony for the conferral of a honorary degree in Venice, but it is plausible that he browses the double issue that the “Metron” magazine dedicates to the Florentine exhibition (“Metron” 1951). The following year, the same magazine publishes on the cover the refectory of the Villaggio del Fanciullo, advertising the article inside which is dedicated to four projects by D’Olivo: in addition to the Village, the vegetable market of Trieste, the Cathedral of Santo Domingo and the Rhine bridge in prestressed concrete. 1952 is an important year for the Friulian architect. Thanks to a mutual friend, painter Giuseppe Cesetti he comes in contact with Leonardo Sinisgalli, a multifaceted figure of a man of culture, with a degree in engineering and student of mathematics, poet and expert in art and architecture, promoter of a humanist vision of technological progress and industry. In the late 30’s Adriano Olivetti appoints him as artistic director of advertising, in the post war period he is art director for Pirelli and in 1953 he gives birth to the editorial project “Civiltà delle Macchine” (Civilisation of Machines). His work is marked by a constant yearning to bridge the gap between the two cultures, technical and artistic. In fact, like “Pythagoras and the classics, he understands the poetry of numbers” (G.Russo, 2013). In this faith in progress, tinged with humanism, which is the core of Olivetti’s lesson, one can sense the tension towards a renewal that has America as its reference model, the country of

pioneers, free enterprise, the individual that can act and express himself only in a democracy.

In the travel report *La lunga strada di sabbia* (The long road of sand), published in the journal “Successo” (Success) in 1959, Pier Paolo Pasolini narrates his circumnavigation through Italy, from Ventimiglia to Trieste driving his Fiat 1100: one of his last stops is the new seaside town, where he notes that:

“In Lignano the Friulian people have made a great organizational effort: there, like in Jesolo, everything came from nothing. And, I must say, the results are really remarkable. The architecture of the villas is dignified and gentle, there’s plenty of space: and the atmosphere is truly worthy of a small American-style beach” (P.P. Pasolini 2005)

Confirming himself as a careful and competent observer, Pasolini captures the two factors that characterize the new adventure of Lignano, where a small beach has the “American-style” spirit that the writer identifies in the architecture of villas and the ample space, that of the pine forest, which in the intentions of the clients and the designer (besides complying with the strict requirements of the Forest Domain) is to be the main feature of the new settlement. To find the Lignano of the pre-urbanisation period, that of the pine wood in the form of a jungle, it is worth reading again the account that Arturo Manzano dedicates to it on the occasion of the exhibition of projects for Pineta held in Udine at the Centro Friulano Arti Plastiche in 1954:

“A superbly wild place, the fairy kingdom of heather, gorse, red pine, sea pinestros, cane. And of eel, turbot, lagoon fish,

fox, hare, and all sorts of coastal birds. And the sea, an empty sea, where ships and large fishing boats go by on the horizon, kept away by the shallow seabed. An environment that could be mythically Mediterranean, or described by Kipling or even, if you will, by Hemingway. “ (A. Manzano 1954)

D’Olivo’s “spiral”

Initially, members of the Lignano Pineta company think of creating a camping area, but later they opt for building a holiday village. In fact, their idea is to make guests live in the midst of a natural landscape of great charm, especially the pine forest, where

“visitors would come to live in contact with nature, watching the sun and the sky through the intricacies of pine trees, enjoying the taste of the primeval Mediterranean myth [...] and imagine living adventurous virgin landscapes, like those described in the pages of Hemingway, Melville, Kipling and Conrad, with vessels far off that cross desert and fascinating lands, or, why not, recalling some elements of the mythological “reverie”, sylvatic and Latin, from the Alcyone by D’Annunzio”. (G. Cojutti, G. Cola, L. Damiani, 1974, 13).

The tender organised by the newly established Lignano Pineta company is won by Marcello D’Olivo (G.Cojutti, G.Cola, L.Damiani, 1974, 11-14), who invests the “spiral” destined to become the iconic image of the new seaside town. It is not easy to reconstruct the motivations and reasoning that leads the architect to choose the spiral form, there are several versions of the story, all impossible to verify, but precisely for this reason they contribute to the

overall charm of the foundation tale. According to Giandomenico Anzil, it is surveyor Enor Milocco, who had already worked with D’Olivo who, when he learns of the Pineta project, introduces the architect to the brother of Mario Anzil, Giuseppe, who holds the position of Chairman in the new company. From that “first meeting the idea of the spiral takes shape and form” (G.Anzil 2008, 23). Milocco also reports that D’Olivo jots the plan in a very short time and almost at the last possible moment to present his work for the Company’s tender. This testimony, collected by his son Daniel, confirms that the peculiar shape could be designed at the last minute because it had long been conceived: that mark, only apparently drawn in a hurry, shows the *modus operandi* of creative inspiration that experiences a different dimension of time with respect to the needs of clients and the production system. The same prodigious rapidity had been shown by Frank Lloyd Wright when Mr Edgar Kaufmann Sr. went personally to Taliesin to express his concern because, despite his insistence, he had not yet seen the project for the summer house to be built in Bear Run, Wright had presented him the watercolour plates of Fallingwater House after a night spent at the working table. It is not about genius and not even of intemperance, but only about the time that the artist needs to create the work through intuition, a spark that lights up after a gestation period neither long nor short, but simply just right.

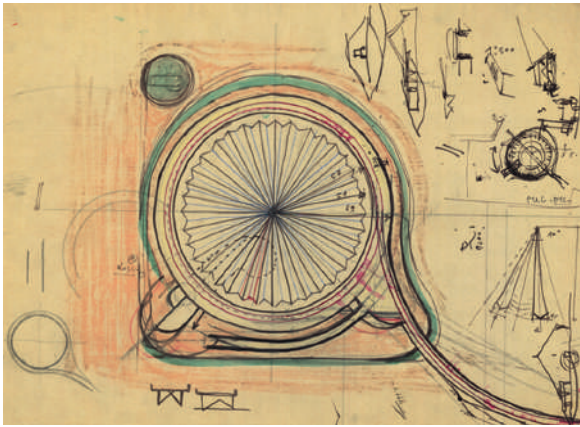
The assignment to D’Olivo is awarded between September and October 1952 (ASL, 1172/03) and the architect sets to work according to the indications provided by client, namely the “maximum respect

and valorisation of the pine forest, destined to remain the dominating element of the park-town” (M.Anzil 1955, page 35), therefore an architecture “with a horizontal structure, to harmonise the buildings with the landscape”, with a separation between residential and service areas, a particular attention to service systems, the inclusion of camping areas and sporting facilities. But the most important issue for the client is road traffic, which, thanks to the “brilliant solution” proposed by D’Olivo solves many of the urban problems. The following evaluation is included in the report that Mario Anzil submits to the Congress of the Friulian Philological Society held in Latisana in 1955. It is therefore an important reference for understanding the motivations behind the development of the plan: streets and circulation are at the heart of the project, as Anzil specifically mentions in his account:

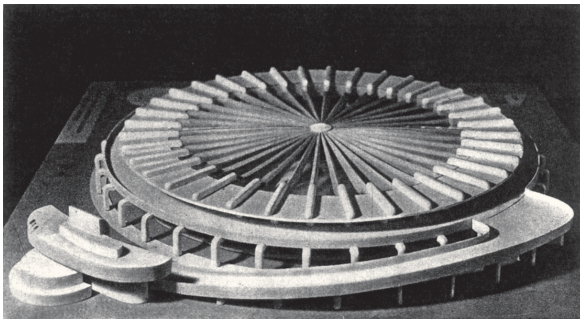
“The streets, in their essential outline, create a spiral with a steady progression; the external lower side of the spiral is the starting point of the streets leading to the sea, which in turn follow a parabolic path. While a large road with two widely separate lanes – creating an internal area for the construction of a single large building hosting shops and meeting spaces nearly 550 meters long – creates a sine wave and connects the central square to the beach. The abandonment of the traditional street grid and the adoption of the curved path just described, provides obvious aesthetic effects and technical advantages. The view changes constantly; the pine forest, growing on an undulating terrain, always creates new mountain-like scenery; each lot has direct access to the road so, eliminating all rights of way, buildings can be surrounded by woods; road traffic is easier and safer thanks

to the almost total lack of dangerous right angle crossings. Finally, crossing of building areas with lines and pipelines is avoided, since the electrical, plumbing and sanitation systems follow the road” (M.Anzil 1955, 35)

The central role that traffic planning plays in D’Olivo’s project is the element that characterizes the entire plan. This is the opinion of Francesco Ten-

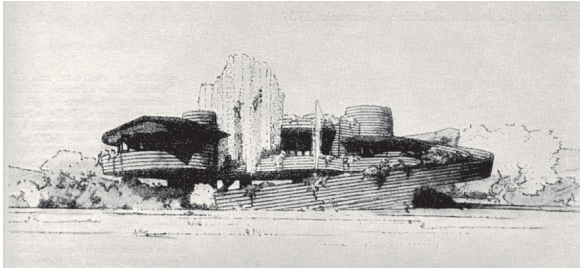


M. D’Olivo, competition project for the Fruit and Vegetable Market in Trieste, in 1951, plan and studies (Galleries of the project Civici Musei di Udine, D’Olivo Archive).

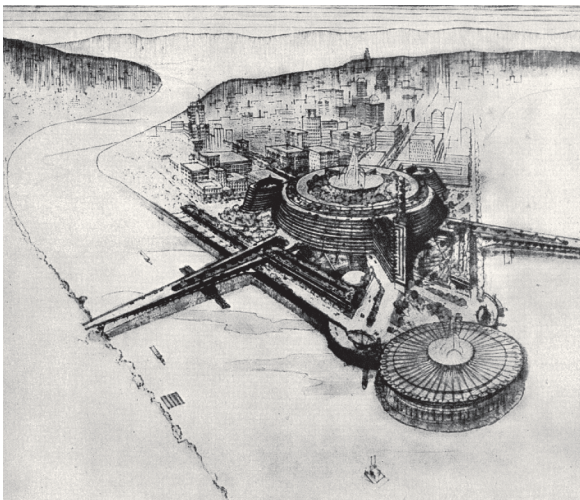


M. D’Olivo, competition project for the Fruit and Vegetable Market in Trieste, 1951 model of the project (“Metron”, 1952).

tori, who defines Lignano Pineta “the first car landscape” (F.Tentori 1992 150). In fact, the town’s route, with its continuous changes, is fully revealed only to the driver. Here the architecture is no longer for the pedestrian, but for the moving man, the user of modern transportation, who sees the landscape with a completely different perspective. This attention to the standpoint of the contemporary and modern observer becomes the hallmark of some avant-garde movements, primarily Futurism, which from the *Stati d’animo* (Moods) by Boccioni to “aeropainters” catapults “the viewer to the centre of the picture.” It is more difficult to identify in the architecture, not to mention urban planning, a direct relationship between the form and the routes designed for traffic management and the different types of transportation. D’Olivo had already addressed the issue of the relationship between architecture and cars in the competition for the project of Trieste’s vegetable market in 1951, where a circular building offers a structural solution made of shelves in prestressed concrete arranged radially. A large ramp allows truck access to the roof from which unloaded goods are carried down to the shops below: the shape of the market is relevant to the problem of functional vehicle circulation, offering an innovative and original solution. Structurally, in fact, the use of prestressed concrete leads him to seek the collaboration of Silvano Zorzi, one of the best Italian structural engineers of the time. The curved ramp is a theme that the architecture of the twentieth century takes into consideration when facing the structure of the garage, a building that thanks to reinforced concrete solves a problem that is bound to be increasingly crucial in



F.L. Wright, Keith House project in Arlington, 1947, exterior view from the south east of the house (“Metron”, 1951).



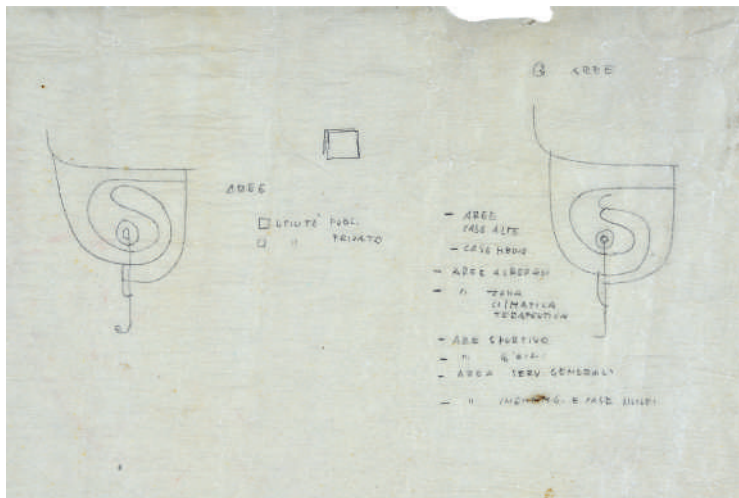
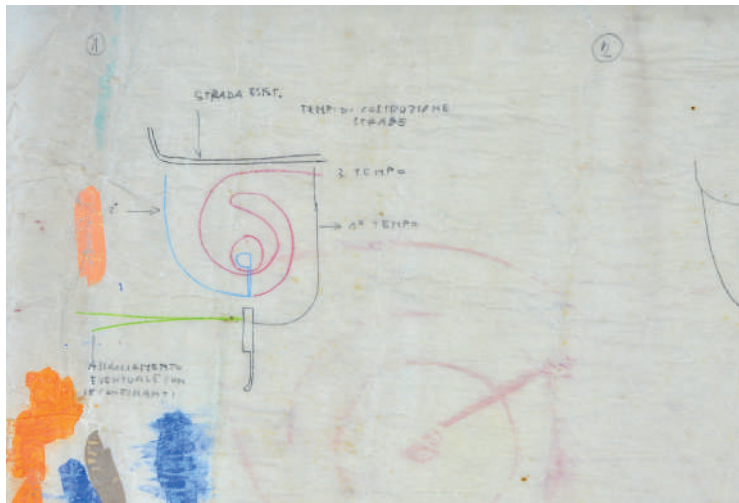
F.L. Wright, a project for the “Golden Triangle” in Pittsburgh, first version, 1947 (“Metron”, 1951).

the modern city, parking space. In the same years in which engineer Mattè Trucco designs the Lingotto building in Turin (1916-1926) with the ramps and the test track on the roof, in the US Wright draws inspiration from garages to design the Gordon Automobile Objective and Planetarium atop Sugarloaf Mountain in Maryland. (1924-25), an architecture in the shape of a truncated cone, where the large ramps

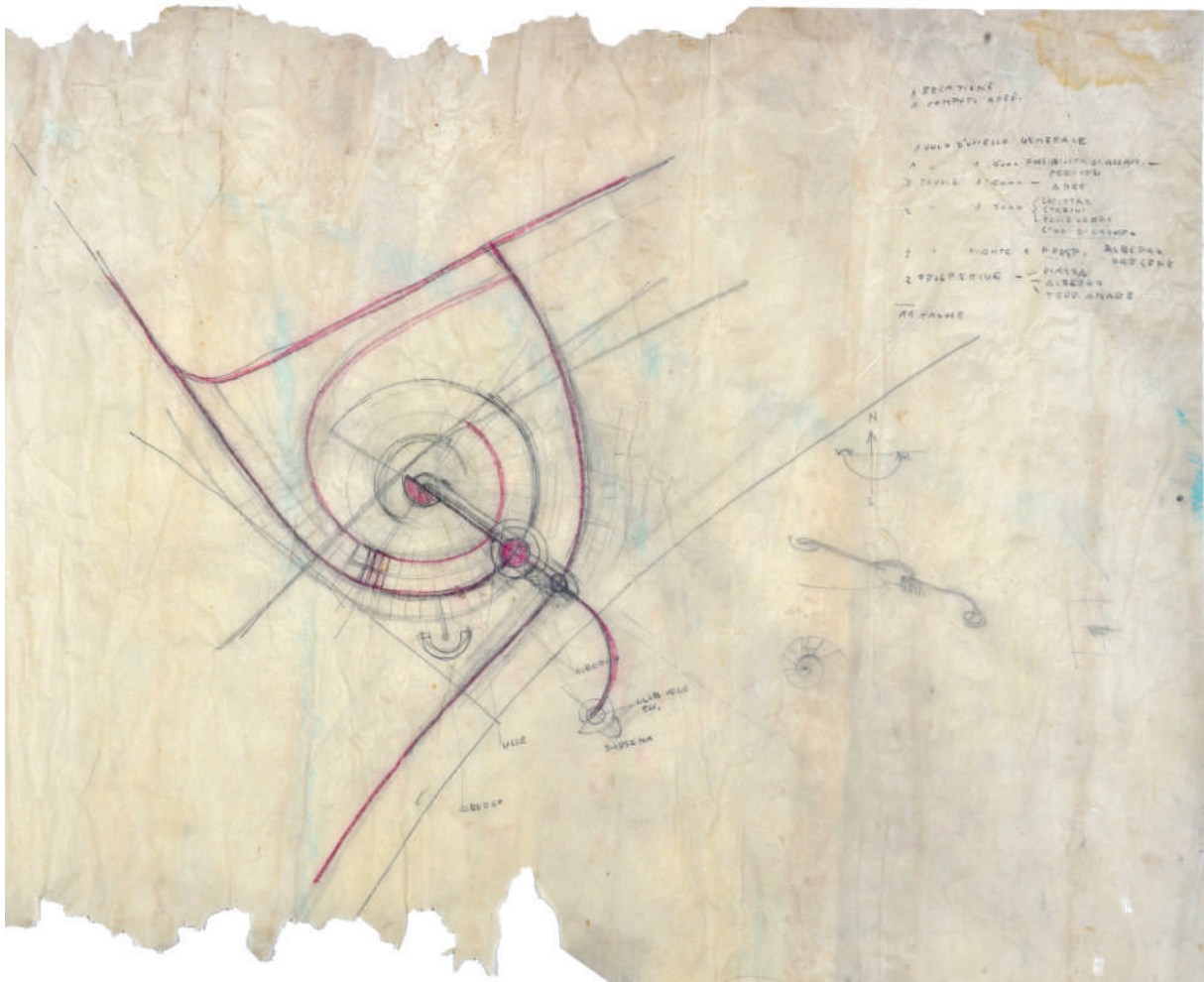
that surrounds it on outside draws a modern ziggurat. Wright writes to his client, the businessman from Chicago Richard Strong, that the idea had come to him by considering famous buildings with a spiral shape such as the Tower of Babel or the Tower of Pisa, but he was also inspired by the shell of a snail

“The spiral is so natural and organic in form for whatever would ascend that I did not see why it should not be played upon and made equally available descent at one and the same time” (J.M.Siry 2009, 43)

The theme of the spiral, which in Wright’s architecture is connected to the ramp, used by both pedestrians and vehicles, is used by D’Olivio in the project for the Vegetable market where the access ramp to the top of the building has the function of creating a differentiated path functional to the loading and unloading of goods. There are two particular projects by the American architect that could have inspired D’Olivio, both published on the double issue of “Metron” on the occasion of the exhibition in Florence. They are the “Keith House, Arlington, New Jersey, 1947 that in the caption accompanying the pictures is described as a dwelling suited to the “southwest way of living” (“Metron” 1951, 50-51): the building has the circular plan that Wright uses in the “solar houses”, whose reference model is Herbert Jacobs House in Middleton (1938-1942), but in this project the body of the building is raised on pillars so that the ramp serves as access to the house. But the most fitting comparison is with the first version for the arrangement of the promontory, called “Golden Triangle”, between the two rivers that flow



M. D'Olivo (attr.), Plan for Lignano Pineta, Studies for the spiral with the division of the areas, 1952 (Teor Private Archive).



M. D'Olivo, Plan for Lignano Pineta, study of the plan with a spiral shape, around 1952 (Teor Private Archive).

in Ohio into Pittsburgh between 1947 and 1949, in particular the Aquarium building, “a construction in concentric rings” placed at the top of the area (“Metron” 1951, 66-75).

Architecture and spirals: the *Spira Mirabilis*

The Guggenheim Museum in New York is definitely the most famous example of the use of the spiral ramp.

In fact, since the first projects dated 1943 Wright makes it the key element, especially in spatial and formal terms. Already during the presentation held

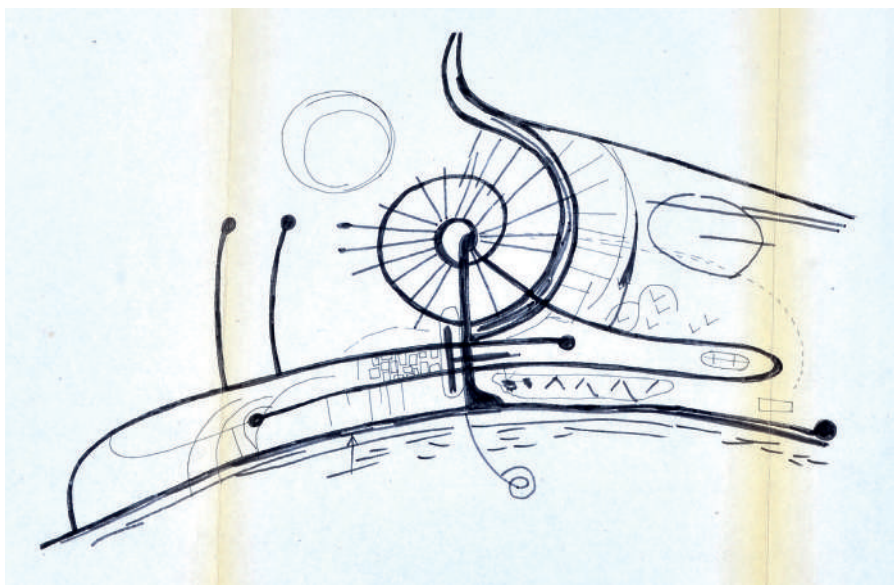
on July 9, 1945 at the Plaza Hotel in New York the press (with the emblematic title of the “New York Times” *Museum building to rise as spiral*) records that the architect has defined the project as “a true logarithmic spiral (J.M.Siry 2009, 156) because, according to him, this geometry refers to the human figure which is one of the cardinal principles of organic architecture, so much so to be reiterated in the presentation of the project in 1946



M. D’Olivo, Plan for Lignano Pineta, study of the plan with a spiral shape, around 1952 (Teor Private Archive).

“For the first time in the history of architecture a true logarithmic spiral has been worked out as a complete plastic building in which there is but one continuous floor surface: not one separate floor slab above another floor slab, but one, single, grand, slow wide ramp, widening as it rises for about seven stories – a purely plastic development of organic structure”. (J.M.Siry 2009, 47)

The spiral represents the ideal of continuity which is sometimes denoted by the term “plasticity”, that is central to his idea of organic architecture and opposes the trilithic paradigm of classical architecture and *International Style*. The spiralling ramp is at the same time a structural and a volumetric shape, a modern innovation made possible by the properties of reinforced concrete. The spiral expresses that “integral sense of the whole” that the master Louis Sullivan had achieved by eliminating the background in its decorations: so that the overturned ziggurat

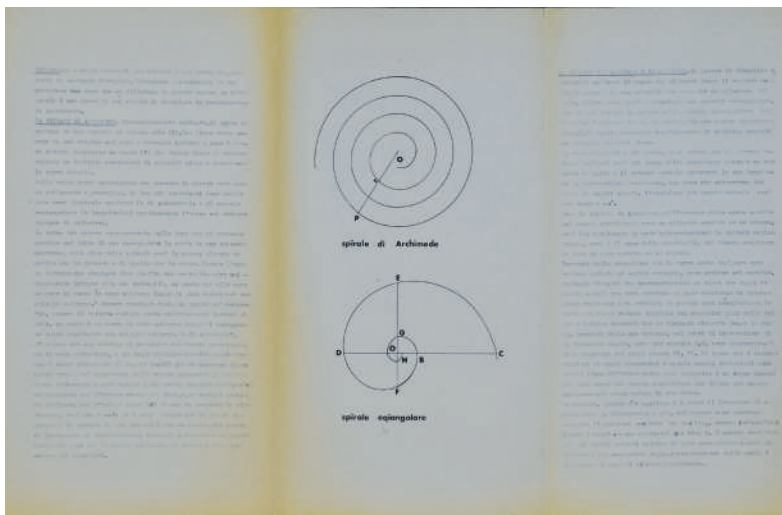


M. D'Olivo, Plan for Lignano Pineta, the logarithmic spiral, original study for the zoning, 1952 (Teor Private Archive).

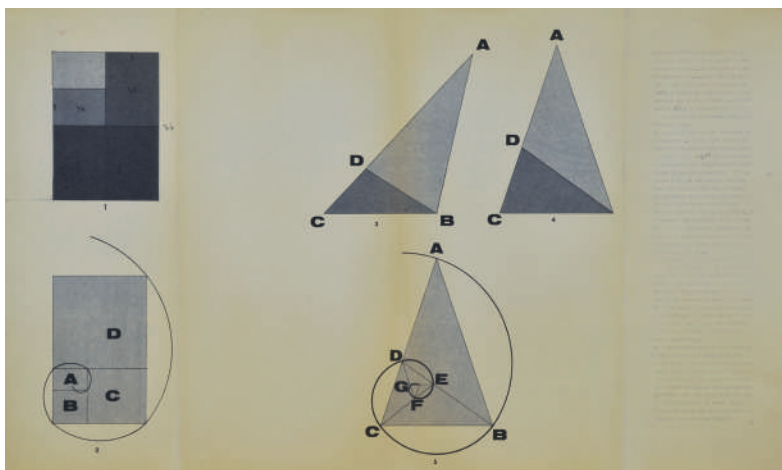
of the Guggenheim becomes the accomplished expression of organic architecture, a synthesis that is truly “mirabilis”.

Some drawings related to the project for Lignano Pineta provide some indications on the spiral that has become the most important mark of the new settlement, but even if there are no signatures or dates, they allow us to reconstruct the various stages of the idea. The starting point consists of a blueprint showing three spirals drawn by hand that define with the number 1 the “road construction schedule”, while with numbers 2 and 3 outline the areas, respectively, for public and private services and the “areas for high houses, medium houses, hotels, a climatic and therapeutic zone, sports, general services, camping ground and nucleus houses”. The writing is by Marcello D’Olivo, and even if there is no date, it can be assumed that this is the first phase of the study

which is based on the juxtaposition of concentric and curved shapes. This hand drawn spiral, reminiscent of the *Heroic Roses* by Paul Klee, for D’Olivo has the important function of distributing the different functional areas along the path of the curves. In addition to this study, we can mention two other drawings that take further the notes contained in the previously described sketch: one contains, still with the handwriting of D’Olivo, the list of tables to be attached to the project, eleven in total, with an indication of the scale in addition to the technical report and the calculation of the areas, and it indicates in the extension towards the sea the location of the dock and the sailing club (cat. D’Olivo 2002, 14). The other drawing contains a lot more information (cat. D’Olivo 2002, 107). First of all, it identifies the types of buildings, both for residential and service purposes, which are necessary for a holiday village,



M. D'Olivo (attr.), Studies for the equiangular or logarithmic spiral (Teor Private Archive).

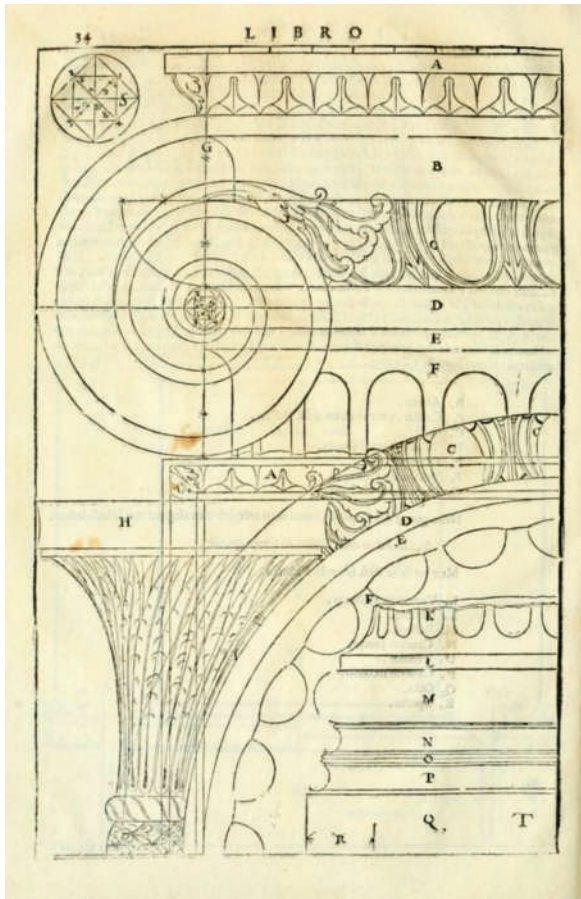


M. D'Olivo (attr.), Study with golden rectangle and triangles (Teor Private Archive).

so much so that on the outside of the spiral in the area dedicated to “sport” there are the “houses for village staff.” The hotels are lined up on the seafront,

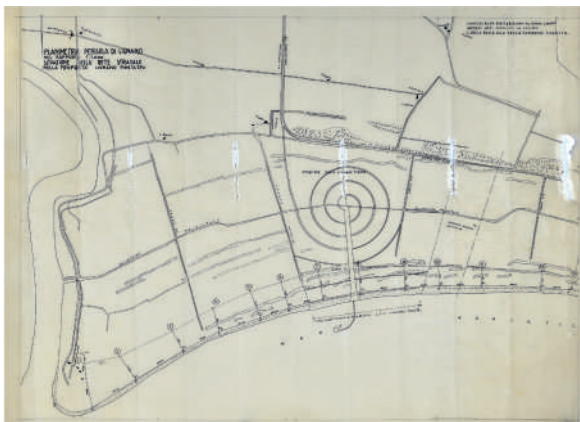
the “camping” is placed outside of the road network in the same area where we find the “uptown houses”. Between this area and the area divided into lots with a radial development which will host the villas, there are the facilities dedicated to “leisure” including an outdoor cinema. The core of the spiral finally includes the church and the civic centre with a post office, police station, infirmary, shops, and tourist office. The subdivision of the land into lots is already well identified. The radial arrangement avoids the need of a right of way between neighbouring properties. The architect has also thought about cars. The plan includes a garage, located close to the beach along the ring, so as to be easily accessible from the road, but also to provide vehicle assistance at the junction with the provincial road. The road connecting the centre to the beach and the pier that leads to the dock (where the Terrazza a Mare will be built) that the architect calls the “great road” (hereinafter referred to as “the train”) has a straight path that starts by a semi circular square, intersects two roundabouts of different diameter whose function is to regulate the circulation that occurs along the spiral, and extends

towards the sea with a hook shaped elevated ramp. In the two drawings the road system does not have the fluidity of the spiral that will be outlined in the next phase and a kind of uncertainty that can be felt here could be attributed to the transition from a pattern of concentric circles referred to by Paolo Nicoloso (P.Nicoloso 2002, 35,49). The use of the circle for the urban plan can be traced back to the

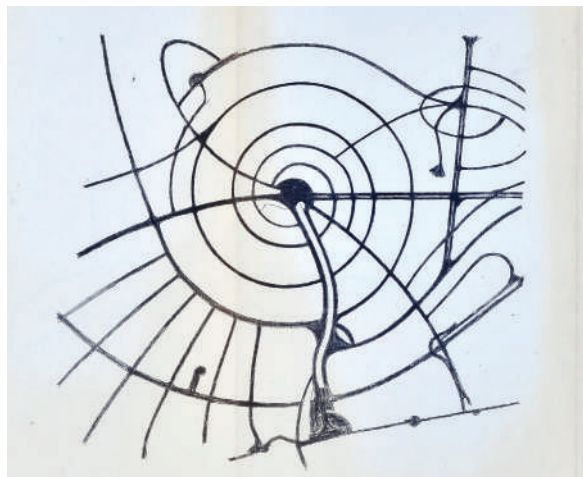


A. Palladio, the Ionic capital and its proportions, table from *The Four Books of Architecture*, 1570.

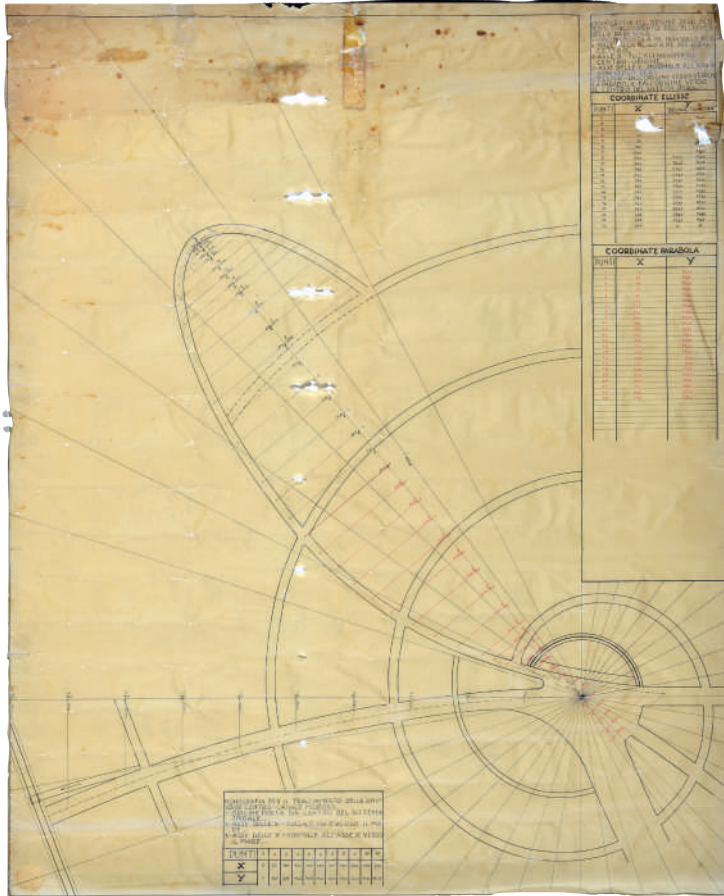
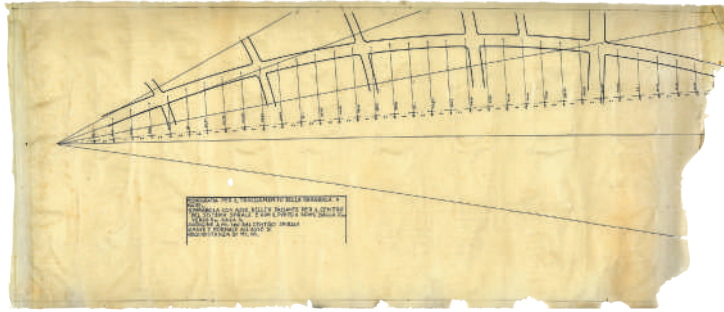
experiences of Wright, in particular the project for Pittsburgh in which, however, the circular pattern is connected to the plan of the architectures, in addition to the Aquarium the project includes a building of colossal proportions consisting of “a circular walk on staggered levels, developed on 11 floors” (“Metron” 1951, 68). Both drawings by D’Olivo show the development of the logarithmic spiral, which is outlined in a sketch dating back to 1952 that “stands out as the only one with the spiral drawn in the opposite direction of the one subsequently built (P.Nicoloso 2002, 35). Here the architect draws a logarithmic spiral, the one that Wright considers functional to organic architecture since it represents a pattern that characterizes many living organisms, in particular the shell of the Nautilus: of this study we know the drawing published in 1972 in *Discorso per un’altra architettura* (Conversation for a different architecture) (D’Olivo 1972, 03.01) and the heliographic copy kept in the Milocco archive bearing the caption “original study on zoning.” Marked with the number 5, the drawing is part of a series that includes numbers 1, 3 and 6 that may have been prepared for an exhibition or for delivery to the client. Among the documents stored in the archive mentioned above there are four heliographic copies that illustrate the different methods of drawing spirals, both the one by Archimedes, also defined as arithmetic or uniform, and the logarithmic, also known as geometric and proportional, for which mathematician Jakob Bernoulli coined the term “spira mirabilis”. The texts accompanying the illustrations are probably taken from mathematics textbooks or descriptive geometry, but may be the reworking of notes taken



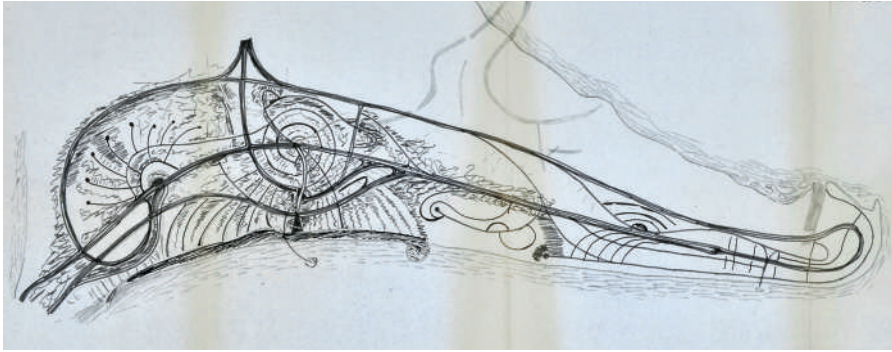
In the panel depicting the "Plan of the peninsula of Lignano - situation of the road network in the property of Lignano Pineta spa", the spiral is that of Archimedes, 1953 (Teor Private Archive).



M. D'Olivo, Study for the road system for Lignano Pineta, 1952-1953 (Teor Private Archive).



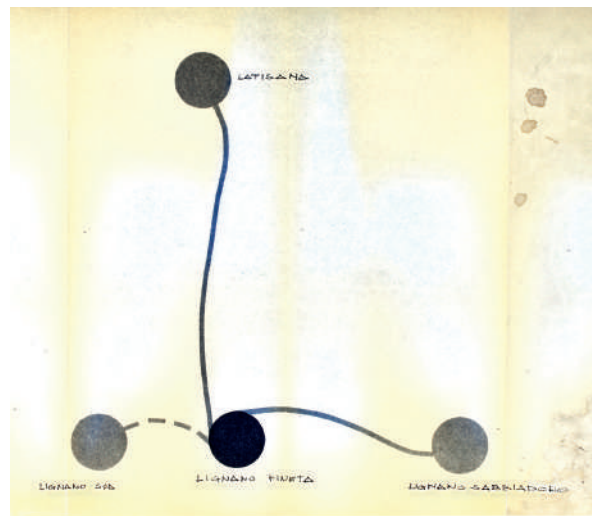
Tables with the “layout of roads and housing development,” parable towards the sea, ellipse, around 1953 (Teor Private Archive).



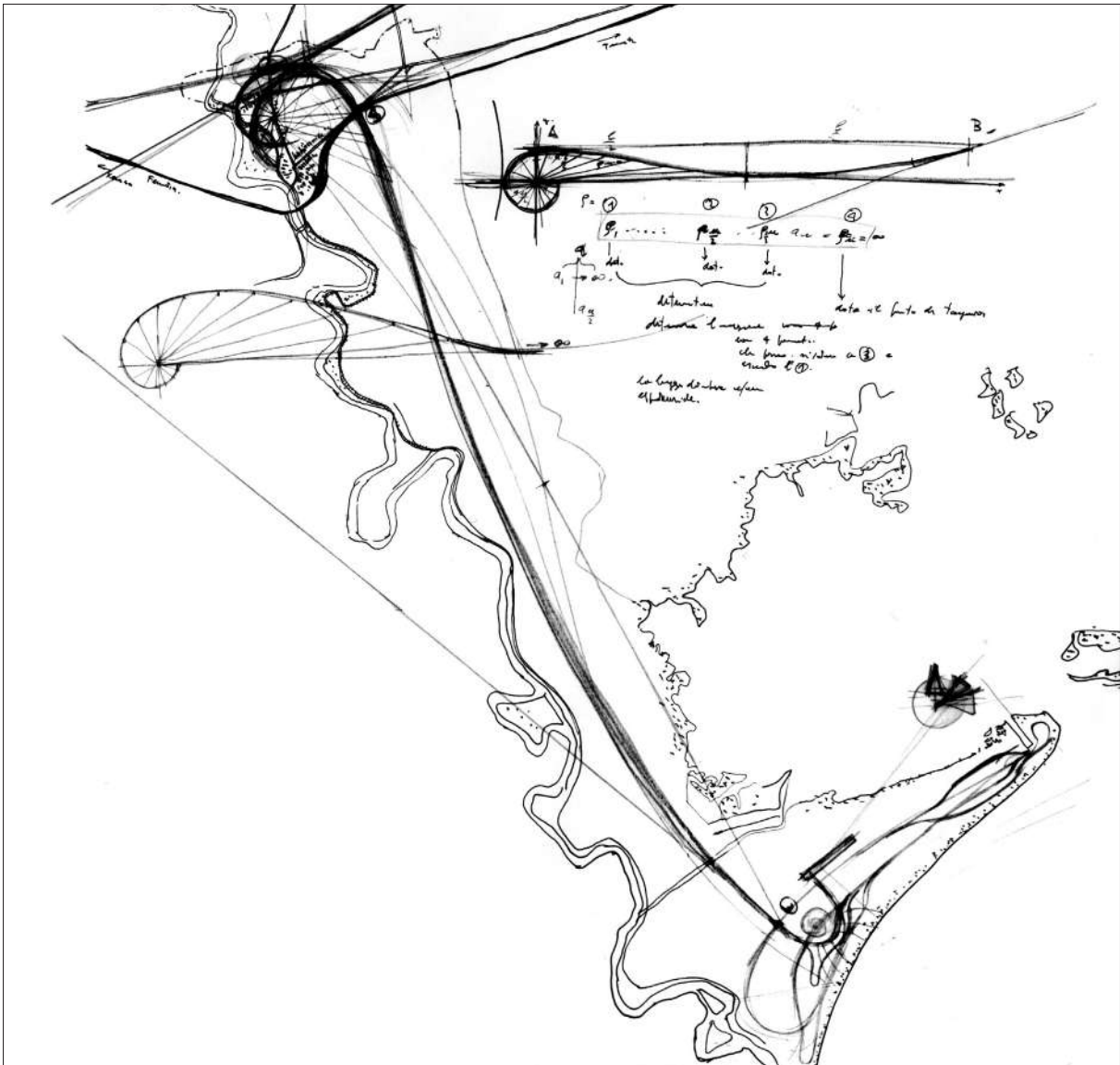
M. D'Olivo, study of the road system for Lignano Pineta, 1953 (Teor Private Archive).

during classes at the university or materials prepared for an exam. The fact that they have been archived along with other drawings for Lignano Pineta suggest that the contents were deemed important for the project. The texts describing the equiangular spiral of the Nautilus makes reference to the fact that the same can be considered a cone wrapped on itself, a consideration that if translated into the language of architectural shapes configures the emblematic ziggurat of the Tower of Babel. Among the methods used to draw a spiral, described in another of the drawings, there is one that uses rectangles or triangles where the sides are in the proportion of the golden section. For a classical architect the spiral is a well known shape, since it is used for the volutes of the Ionic capital. Architects of the Renaissance, *primarily* Palladio and Vignola, transpose in the famous tables of their essays the description contained in the text by Vitruvius. The golden section or *Divina Proportione* (from the title of the essay by Luca Pacioli) has always held a (magic?) attraction for architects, who still in the twentieth century never stop to confront themselves with what Le Corbusier, quoting Pascal, calls “esprit de géométrie”. From regulating Plans

to the *Modulor* his reflection and design are in constant dialogue with this noble cultural heritage, and it is not surprising therefore to see the logarithmic spiral and the inevitable Nautilus appear among the illustrations of *La Maison des homme* (1942). In the approach to the project for Lignano Pineta, which is the first experience of D’Olivo in urban planning, the choice of the “organic” dimension is



M. D’Olivo (attr.), general development plan for the town of Latisana, summary diagram, 1954 (Teor Private Archive).



M. D'Olivo, general development plan for the town of Latisana, study with equation, *Discorso per un'altra architettura*, 1972.

not to be connected only to the indisputable influence of Wright, but also to the knowledge of Le Corbusier (P. Di Biagi 2002, 13-14). Another great admirer of the architect is Sinisgalli, passionate lover of architecture, (G. Volpe 2011, 71-125) working for many magazines including “Casabella”, “Domus”, “Stile”, “Campo grafico”, “Edilizia Moderna”, who personally meets Le Corbusier since he is part of the group that accompanies him to visit the Air Show held in Milan in 1934. The second meeting with Le Corbusier takes place again in Milan in 1952 during the visit to the QT8, to which also D’Olivo participates. Engineer Sinisgalli knows well the properties of the golden number and its presence in many organisms and phenomena of nature, as he writes in the article *Linee Guida* (Guidelines) published in “Civiltà delle Macchine” (Civilisation of Machines) in 1953:

“Do you know the lines of growth of a flower, a leaf, the arrangement of sunflower seeds? You know the phyllotaxis? A strange number determines the generation of these lines. A number that holds more than half of the living universe like $\pi = 3.1416 \dots$, a transcendental number, it holds the mechanical universe. It is the number $\varphi = (\sqrt{5} + 1) : 2 = 1.618 \dots$. And here we are at the spiral, that of pine cones, snail shells, galaxies, colonies of bacilli “. (L.Sinisgalli 1953)

“In Lignano you live inside a spiral”

According to Sinisgalli, with “its light favourable to geometric inspiration, to the *esprit de géométrie*”, Lignano is a predestined place, in fact you live

“Inside a spiral: the very spiral of Archimedes, of which even young kids here know not only the simple equation, the constant ratio between the radius and the angle, but also all its other beautiful properties” (L.Sinisgalli 1955, 37)

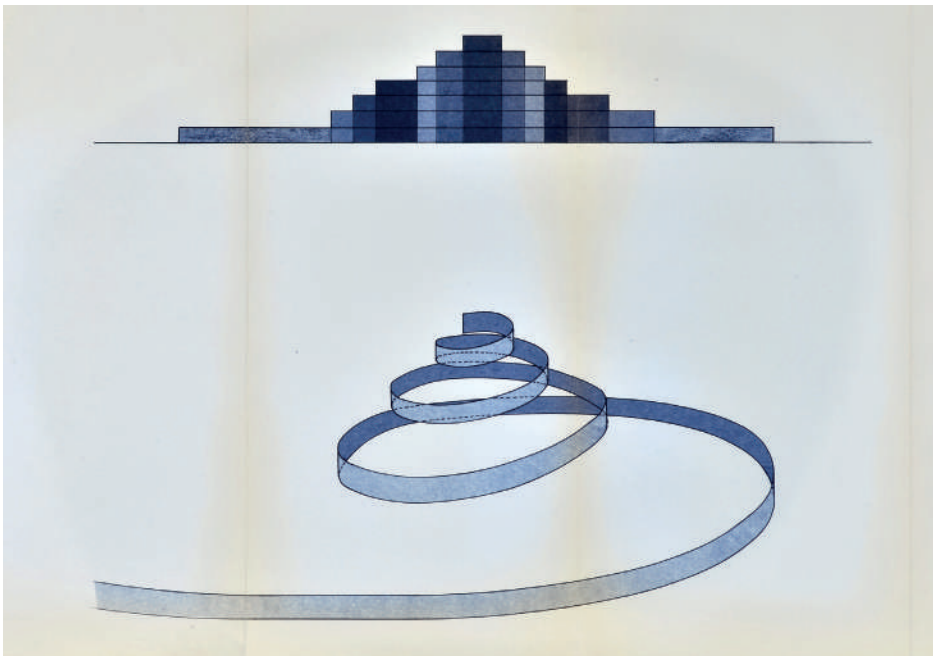
In the ink drawing describing the *Plan of the peninsula of Lignano*, situation of the road network in the property *Lignano Pineta spa* inside the trapezium enclosing the area of interest, stands the spiral of Archimedes, the one with a uniform growth: D’Olivo has now chosen the geometric matrix, but in this variant the “great road” follows a straight line, but it will take a curved path in the final version (“the train”). When Sinisgalli visits Pineta he can see the final plan, which he describes with the admired awareness of a geometry lover:

“From the centre of gravity of the area, 54 meters from the centre, on the West radius was built a spiral with a constant progression of 3 meters for every 10 degrees of movement. All subsequent calculations depend on this initial formula: the curved junction with the road, the central sinusoid, the ellipses to the north, the parabolas towards the sea and the other traffic roads for a total length of 15 km. The plan shows the different areas created from the layout of the roads, they correspond to the different destination given to each zone. The curvilinear arrangement of the inner road, in addition to eliminating the continuous crossroads, makes it possible to reach any point of the floor plan in the minimum time and across the shortest space. (L.Sinisgalli 1954, 40)

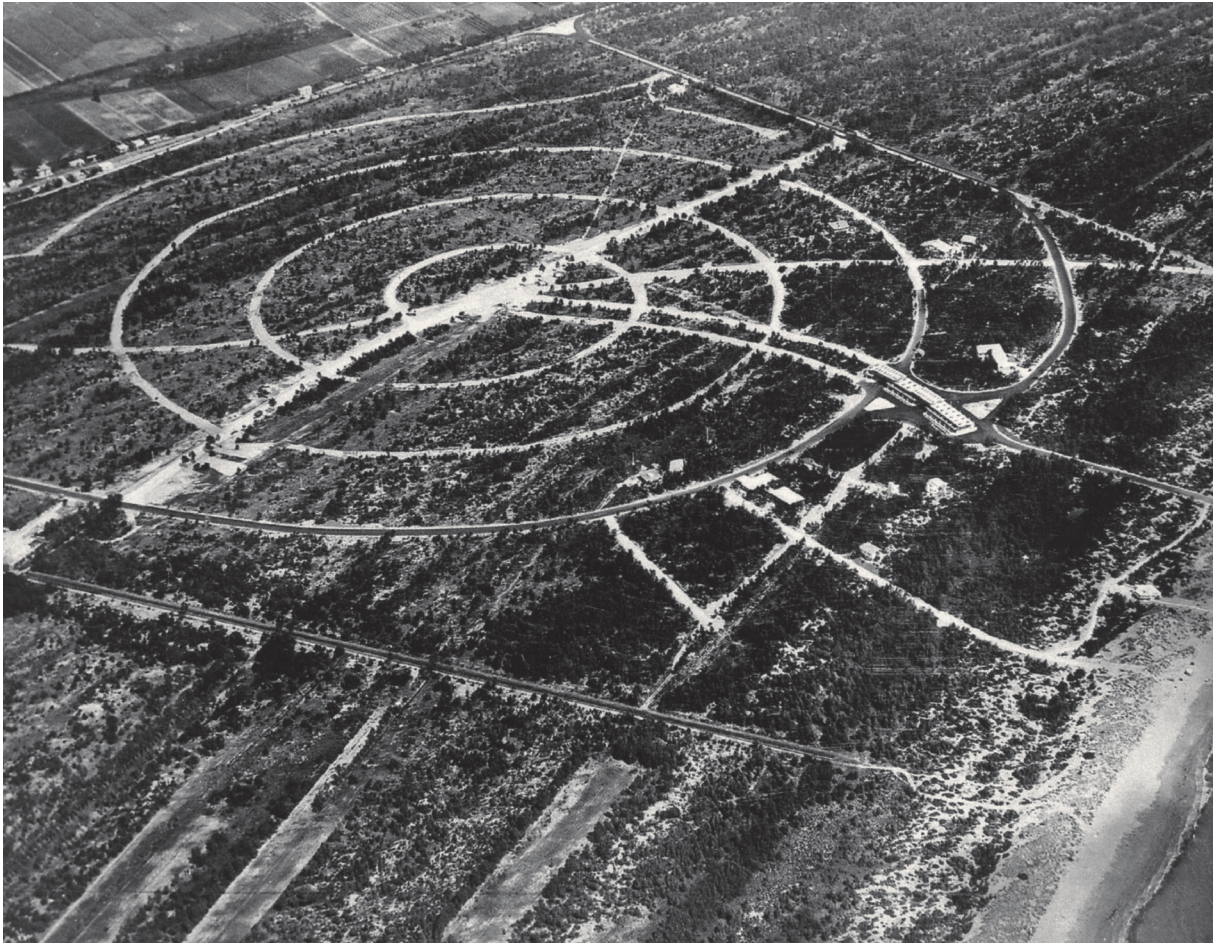
But more than to Le Corbusier, Sinisgalli’s admiration is directed to Wright, who he had known and appreciated thanks to Edoardo Persico, who



M. D'Olivo, plan for Lignano Pineta, study on the zoning with buildings of different heights, around 1954 (Teor Private Archive).



Development of a logarithmic spiral and ziggurat, around 1952-1953 (Teor Private Archive).



Aerial photo of the spiral of Lignano Pineta just drawn on the ground.

in his *OProfezia dell'architettura* (Prohecy of the architecture) had praised the American architect, considering him the initiator of the revolution in the architectural language. So, ten years after the death of his friend in the article *Edoardo Persico e la crisi dell'architettura* (Edoardo Persico and the crisis of architecture), Sinisgalli argues that

Persico had the time to find out the terms of the crisis and understand that the way of the architecture is not the hive, but the shell of the snail". (L. Sinisgalli 1987, 52)

A series of drawings attributable to the table with the *Monografia per il tracciamento delle strade e lottizzazione* (Monography for the tracing of roads and development) constitute the preliminary stage to the topographical operations by which the design is projected on the construction ground. In this phase the competence of surveyors becomes crucial, as recalled by Giandomenico Anzil:

"Surveyors Enor Milocco and Enzo Collavini, lost in the pine forest, planted stakes at full blast, heeled by bulldozers of the Mattioli construction company, roaring eager to pave the dunes and open roads and squares according to the project by architect D'Olivo". (G.Anzil 2008, 23)

The bulldozers start their work on June 5, 1953 before the permission from the Forestry Department, but the initiative enjoys a general consensus and is perceived favourably by the institutions in charge, primarily the municipality of Latisana. The project tables that only concerned the plan for Lignano Pineta, are joined by those concerning the entire peninsula,

from Sabbiadoro to the mouth of the Tagliamento, starting from the road system. This development that enriches and completes the plan, emerges from the correspondence among Hon. Tiziano Tessitori, the mayor of Latisana, Francesco Zanelli and Francesco D'Olivo (ASL, 1172/03) culminating with the award to the architect by the city council of Latisana on October 31, 1953 of "the preparation of the master plan of the new Lignano, harmonising it with the one already in place in the old Lignano" (ASL, 565/60). In the letter to the Mayor, D'Olivo explains that at the origin of this expansion are on one hand his indications and on the other the strong solicitations of other entities involved, a sum of interests that culminates with the public appointment. In the general plan the curvilinear paths are dominant, consistent to the spiral of Pineta, a real distinctive element also in subsequent proposals, such as the satellite city of Rome of 1955, the village of Manacore (1959) and many others.

Since under the planning law of 1942 it is not possible to draw up a detailed plan before the approval of the general layout, the appointment for the peninsula of Lignano is extended to the entire town of Latisana. In a service conference held at the office of the Magistrate of the Waters in Venice on February 14, 1955 to evaluate this plan and the urban development plan (ASL, 1159/34) it is agreed to call in two technicians in support to D'Olivo for a collegial planning, but the architect, despite having agreed to the request, presents independently the project on April 24, 1955 signing it with his partner Adelsi Bulfoni (ASL, 1159/34). The reaction of the authorities is immediate, the prefect of Udine orders Mayor

Zanelli not to display the drawings of the plan (ASL, 1172/03), since the agreements had been breached. The plan by D'Olivo is summarized in a table with the general pattern consisting of four circles, three arranged at the bottom representing Lignano Sabbiadoro, Lignano Pineta and Lignano South (now Riviera), while the fourth circle representing Latisana is in the upper part, connected by a line that symbolises the road with a softly curvilinear shape that is the result of a trigonometric equation. Again an equation in the form of a logarithmic spiral is plotted on the study for the connection between Latisana and the peninsula of Lignano included in the drawings of *Discorso per un'altra architettura* (Conversation for a different architecture) (D'Olivo 1972). The formula used by D'Olivo for the plan of Rome's satellite city (1955) – “the sunflower city” – is transcribed in the article that Michele Parrella publishes in “Civiltà della Macchine” (Civilisation of Machines):

“We found among the notes by D'Olivo a formula that we looked at for a long time, without grasping its meaning. We had heard from him that the set of curves was enclosed in a single equation. For those who can taste its flavour, the equation that includes all sinusoids related to the horizontal plane xy is as follows: $y = R + [sen x + tg (\alpha / n)]$.” (M.Parrella 1955, 28-29).

But trigonometry is not enough to protect the brilliant designer from criticism that starts to arrive from many sides, particularly from some companies worrying that the development of Pineta could harm the interests of the owners of neighboring areas, and quite telling in this regard is the debate triggered in

the daily press on the occasion of the exhibition of the D'Olivo project for the “Lignano peninsula”, curated by Arturo Manzano and inaugurated in Udine at the Centro Friulano Arti Plastiche on September 18, 1954. Among the most vocal opponents there is engineer Giovan Battista Rizzani, President of the Tourist Board, who challenges the eminently artistic plan by D'Olivo that goes against the existing reality of different interests, distant from the utopic vision of the architect's proposal. Similar considerations, even if expressed with more diplomatic tones, are contained in the *Parere* (Expert opinion) prepared by engineer Luigi Zatti (12/07/1956) on behalf of the municipality of Latisana. (ASL, 1172/03) The professional notes that the plan by D'Olivo “is devoid of the economic part” and that, in his opinion, constitutes a “serious deficiency”. He also remarks that the plan “ignores the existing road network and includes the new construction of new transit routes, distinct and different.” In summary, the grandeur of the plan contrasts with the economic and financial reality, which makes it impossible to implement, therefore if the project is to be put into practice, it needs a drastic downsizing. The remarks of the engineer are joined by the feedback from architect Luigi Piccinato who, commissioned by some private companies, S.I.L. (Società Imprese Lignano), S.I.A.L. (Società Imprese Agricole Lignano) and S.T.A. (Società Turistica Adriatica), studies “the adaptation of the Master Plan for the City of Latisana in the part concerning the peninsula of Lignano and their property lands” (ASL, 1159/34). This time the object of criticism is the urban plan, which is characterized by

“A theoretical study that is based on antiquated planimetric formalisms rather than relying on a more objective and careful study of those programmatic assumptions, that alone should guide any serious effort in urban planning. [...] Here we see concentric rings of spiral streets, parabolas of roads, parking spaces, plazas and squares drawn obeying a formalism unfortunately detached from the urban framework [...] This sum of elements does not represent a real plan.” (ASL, 1159/34).

The criticism highlights the main features of the plan by D’Olivo, which in the opinion of an urban planner like Piccinato are inconsistent with the practice of the discipline. In fact, for D’Olivo, as Paola Di Biagi underlines, “the urban project is not a process, it is not the outcome of forecasts, nor regulatory legislation, but rather a creative act, a pure pre-figuration” (P.di Biagi 2002, 13). In conclusion, he “uses more the tools and the scales of architecture than those of urban planning”(Ibidem). The same considerations could be applied to the fascinating projects that Wright creates for the Great Baghdad (1957), which in addition to the new University, planned the creation of an artificial island (Edena) in the Tigris River hosting a cultural centre (M.Marefat 2009, 74-91). The predominant circular geometry, already tested in the project for Pittsburgh, is intertwined with bows, crescents, spirals and ziggurats in a crescendo of complexity that culminates in the monument to Haroun al-Rashid, the founder of Baghdad. While Wright is never able to realize his urban utopias, D’Olivo sees the birth of his ideal city in spiral form, which in aerial photos taken before construction transmits the same figurative suggestion of the mysterious Nazca lines,

visible in their entirety only from above. Usually, the spiral is read as a two-dimensional figure, but one of the drawings from the Milocco archive, marked by the number 6 and bearing the heading “Studi sulla zonizzazione” (Studies on zoning), allows to read also its three-dimensional development. In fact, the radial plots are divided into areas with buildings of different height, five floors for the shopping area, four for the hotels, other hotels and residential centres with three floors, then the villas and terraced houses of one or two floors, while single-family homes have a single floor. No wonder if looking at it from the sea this hypothetical city would have a stepped skyline, like a ziggurat of urban dimension, probably with a spiral development, consistent with the plan. It is therefore chosen to have a horizontal city that after the departure of D’Olivo, grows in height without an overall plan, so that the result is a chaotic development where the utopia is lost, overwhelmed by the reality of diverging interests and mutual vetoes that create the vision of a Babel that destroyed its tower.

Architectures for a “city on the moon”

After having created and started the construction of the spiral city, in the summer of 1953 D’Olivo begins to put his attention on the architecture, both of public spaces such as the service spine, called “the train”, but also of villas and holiday apartments, addressing the topic of prefabrication already experienced in the Villaggio del Fanciullo. For the new and ideal holiday city on the Adriatic, which overlooks the

sandy coastline of the peninsula of Lignano dominated by the dune landscape and the historic pine forest, D'Olivo traces its regular spiral providing a point of view that is always different to those who go along its curved path. In this labyrinth, the architect begins to give shape to the architecture of what his friend poet engineer will later define "a city on the moon" (Sinisgalli, 1954, 39). Of this fantastic Lignano Sinisgalli sees the genesis in the study where on the large maps which show "many small circles, even slightly larger than a dot" (Ibid, 38) which are used to identify the trees that in the intention of the architect have to be all saved. As recalled by the article published in "Domus" in 1934, the main concern of the architect is "to introduce roads, houses, hotels, shops without altering the feel of the forest" (Domus 1954, 2) and that's at the origin of the road system, featuring curves with different centres in order to enable the vision of "different landscapes, dunes, pine trees, glades, sea, beach" (Ibid). The environment is carefully investigated with a series of drawings that serve both for urban planning and for the design of buildings, so as to give the project an openly organic footprint. The master plan that Sinisgalli is able to see and publish on the pages of "Civiltà della Macchine" (Civilisation of Machines) in 1954, provides for "the arrangement of about a thousand plots with an average of one thousand square feet per plot" in the intentions of D'Olivo each can become "the owner of about fifty trees, and will have the obligation to occupy with building only a fair share of the land." The new element of these buildings for the "horizontal city" is that they have no resemblance to city houses, in fact there is no

"superstructure, no plaster, only a bed for sleeping at night and staying indoors in the hot afternoons (but with a continuous air circulation), a few walls, or partitions, some floor, or track, and the minimum necessary. In short, a tent, an umbrella in concrete and wood, a shelter rather than a home. Who comes here must feel the taste of walking all day barefoot, with wet or dry heels, must be able to sit on the ground, and draw as much as possible from the source of inexhaustible vigour that constantly flows from the sea, sand and leaves. Along the spine of the Great Road, as provisionally it is called on the projects, the first stores were built, the first meeting places, the first halls for the community of vacationers. The city will be composed of different centres, but they will all be autonomous and complementary at the same time. There will be no need for barbed wire or walls with glass shards to protect one's freedom or loneliness. The trees, shrubs, and dune ridges will be enough. (L.Sinisgalli, 1954, 39)

For the "train", D'Olivo studies shapes that are functional to the building system, that makes use of prefabrication for many parts: pillars, balustrades, steps and dividers, while the covering curves "are made of brick with a ventilation space between them and the suspended ceilings, in pine planks" ("Domus" in 1934, 7). This building that follows the sine wave from the main road hosts shops on the ground floor and upstairs includes exhibition and meeting halls, coffee shops, exhibition spaces and apartments for retailers. The realization of the building complex is entrusted to the construction company of Ermenegildo Ursella and his four children, "masons for generations" from Buia. The company run by the Ursella family that Sinisgalli calls "world class artisans, unrivalled workers", are the added value of

the visionary architecture by D’Olivo, who has collaborated with them for the Villaggio del Fanciullo. The organisation of construction work is

“very particular, a modern form of the medieval artisan community. Workers are trained within the community itself, through a school – their school from Buia – where the boys begin at fourteen and when they are eighteen they are masons and carpenters, and master builders at twenty-five. And the school is the construction site itself” (Domus 1954, 4)

Besides the school, the Ursella company builds its own

“Concrete mixers, concrete block machines, oscillating plates for thin precast concrete, metal moulds and formworks, channelling elements, elements for balustrades, hollow blocks for concrete masonry, guttering elements, pillars, steps”. (ibidem).

It is these Friulian masons defined by Vincenzo Lacorazza “a ‘team’ of masters of concrete” (V.Lacorazza, 1952, 39) that constitute the value added of Marcello D’Olivo who, thanks to them, can give birth to his unusually shaped dreams, first in Trieste and later in Lignano. The Ursella company combines the quality of handicraft production with the research for new techniques. It is infact in their backyard that engineer Sinisgalli sees the “first experiments with prestressed concrete” (Sinisgalli 1954, 37) that in Italy few other companies are able to create. And perhaps it is the small size of the family-run Ursella company that makes it possible to run experiments that do not require large investments and that other companies could find economically less convenient. The Ursella

family is no exception in the Friulian architecture context, which has counted extraordinary examples of construction firms that have paid particular attention to the use of new materials, especially reinforced concrete since the dawn of the twentieth century, D’Aronco and Tonini among all. Friulian master builders and masons consolidate their fame also abroad, so much so that it is not uncommon for the family dimension to extend to an entire community (like in this case...) and that the expertise offered by the companies include carpenters, blacksmiths, painters, tinsmiths, tilers. The production of building materials is another distinguishing feature of these companies which provide a finished product, and since the entire supply-chain is handled in house, the quality of results enjoys an unquestionable increase. In his history of Italian construction after World War II, Sergio Poretti (Poretti 1997) recalls how between the twenties and thirties the use of a reinforced concrete structure in public and residential construction remains confined to the tradition of masonry construction, and also after the war the prevalent choice is of a language that if updated, continues to offer as reference model a kind of

national dialect, which first generates the most romantic forms of neorealism, and later the more sober realism and cultured professionalism, to finally produce the most sophisticated experiments of neo-art nouveau and neo-eclecticism of the early sixties (Poretti 2002, 47).

The researcher also reminds that prefabrication in Italy has had little luck in terms of residential development, since the traditional structure of the

construction site ensures higher employment, an element that government policy of the time supports in the particularly delicate phase of post-war reconstruction. Prefabrication is instead used successfully in terms of structural innovation, but also the innovation of design, for industrial construction. It should be enough to recall the activity of Angelo Mangiarotti and Pierluigi Nervi, not to mention the Italian engineering masterpieces in the fifties and sixties by the same Nervi, Silvano Zorzi, Sergio Musmeci, often in association with architects, like the partnership between Giò Ponti and Arturo Danusso. In this context, Poretti argues, the extensive use of prefabrication in his activity makes D'Olivo "a singular episode in the situation of the country" (Poretti 2002, 49). If the construction of the "train" in Pineta is the most prominent example of the collaboration between the Ursella company and the architect, as documented by the attention of the press at the time ("Domus", "Metron", "Casabella Continuità"), his work includes also villas, hotels, and the buildings for general services of the camping created between 1952 and 1957, a period preceding the abandonment of Lignano Pineta, as noted by Michael Parrella

His work has been truncated in the middle or just before. The contractors have driven down the director from the podium, tore his papers, unsure of the audience, with their eyes on the cashbox, full of fear. They did not know that brilliant, successful works cost less; that compromises ruin not only the show but their own interests; that ultimately D'Olivo had designed and put in place already a series of standard modules in precast concrete, in order to reduce spending and achieve unity of style (M.Parrella 1958, 298).

The bitter account for a work that would have been a "model of contemporary architecture" focuses not only on the aesthetic factor but also on the economic profile that prefabrication would have generated. Cost savings are in fact a major factor in the use of new technology. Among the reasons that trigger research on new construction systems that need to combine speed of execution and cost, there is the emergency dictated by refugees from the Flanders to which Le Corbusier responds with his project for the *Maison Domino* (1915), which uses reinforced concrete for the supporting structures. In the United States, between 1915 and 1917, Wright develops the *American System - Built Houses* with Arthur L. Richards "to offer-middle class home buyers the opportunity to build customized homes with guarantees of price and quality" (R.Cleary 2009 50). The architecture of the twentieth century that among its themes includes standardization, offers solutions for needs that are sometimes dramatic, as those of war or economic crisis, which in the two post-war periods shape the historical and social context that is the background for the events of the Modern Movement. The houses of the American System for which Wright creates 138 modules, are made of wood. This is the material that the master favours for the projects of the Usonian houses in the thirties, beginning with the first one, for Herbert Jacobs in Madison Wisconsin (1936-1937) whose total cost, including the fees of the architect, is \$5,500. For the middle class impoverished by the crisis of 1929, Wright studies innovative solutions to reconcile cost and quality in architecture, finding in prefabrication a very important ally. Equal care is then dedicated

to the construction company or better yet to *master builders* who in the years before World War II, with the continuing crisis, offer services and qualified professionalism at affordable prices, so much so that after World War II – as recalled by John Sergeant – the economic recovery leads to increased costs. Also D’Olivo, like Wright, designs for an educated middle class, open to novelties, forward-looking but with limited capital, therefore the use of new materials and new techniques become a priority and is achieved thanks to the Friulian *master builders*. The spiral plan of Lignano Pineta seems to affect architectures that favour circular and curved shapes although there are many rectangular and triangular shapes, as in the studies for standard houses (minimal and terraced, 1954) and the Kechler house (1954) never built, Villa Andretta Bertelli (1953-54), villa Iaizza (1954-55), Savelli house (1956) and Villa Sinigalli (1954-55). The dialogue with Wright becomes more apparent in the projects for the dancing club “Il Fungo” (1954, later demolished), the villas Mainardis (1954-55) and Spezzotti (1955-57) and Villa Heller (1955, never built), due to the plans using a circular geometry but also to the choice of integrating the building with the surrounding natural environment, with attention to interesting views of the landscape. Both villa Mainardis and villa Spezzotti are huddled on a dune replicating the placement of the second Jacobs house (Solar Hemicycle) where the orientation to the cardinal points defines openings and materials of the facades: the northern facade is covered with a small earthen mound that has the appearance of a natural hill from which emerges the curvilinear shape of the upper floor with its stone cladding,

marked by the ribbon window of the bedrooms. The overhang of the flat roof doubles as sunscreen in addition to protecting against the elements the openings and the wall. The southern facade is fully glazed and also in this case the wide overhang of the roof offers an effective shelter from light and heat. This project (plans and photos of the construction) is published in the double issue of “Metron” dedicated to the exhibition of Wright in Florence, along with other unrealized projects that have in common the circular plan both dated 1948, the Glen Mc Cord House in Arlington (New Jersey) and the Harry G. John Jr. House in Oconomowoc (Wisconsin) (M.Casciato 2002, 32). The characteristic plan of the Spezzotti House, formed by the intersection of four concentric circles spaced by one meter in order to generate tangent and unaligned arcs gives the perception of an open and dynamic structure. A similar layout characterizes the Llewellyn House by Lloyd Wright (1953), in this case exhibited in Florence but not published in the catalogue. In the years of training in Venice at the Faculty of Architecture to the lessons by Samonà and Scarpa, D’Olivo prefers the courses held by Carlo Minnelli, Professor of Construction Science, and attends the Physics courses held by Giorgio Salvini in Padua (F.Borrella, 2002 92). Moreover, economic hardships direct him to seek immediate employment and develop partnerships with the business world. Just after graduation, he starts working with the Rizzani company making calculations for reinforced concrete. It is also quite significant that the DBB Study is founded with two former classmates, Adelsi Bulfoni and Eduardo Belgrado. And it also significant, that the projects imple-



Marcello D'Olivo, villa Spezzotti, 1955-58, external view (Photo by Stefano Peres).

mented are those located in Trieste, where until 1954 the administration is entrusted to the Allied Military Government that considers the reconstruction of both the building and industrial landscapes a major issue. For the Anglo-American allies the economic and technical factors prevail on aesthetics, but it is also true that they favour to provide job opportunities to young architects and engineers, because not compromised with the fascist regime. In these early fifties, in a Trieste governed by the Allies it may happen that the newly graduate D'Olivo can get the important opportunity of the Villaggio del Fanciullo or that Roberto Costa and Dino Tamburini can realise the two tower houses in via Conti (1952) despite the fact that client, the Autonomous Institute for Public Housing,

is opposed to the type of construction, considered unsuitable to the city of Trieste. (D.Barillari 2004, 31, 194). The yearning for modernity, combined to the need to leave behind a past to be condemned, is shared by the Italian architectural elite after World War II. One of the solutions identified for the purpose is organic architecture. The work of Frank Lloyd Wright is certainly an element of comparison and a source of inspiration, but equally important are the parameters of functionalism, where concepts such as technical innovation, prefabrication, and standardisation play a central role. In Lignano Pineta architect D'Olivo finds the pioneering spirit and vitality of the post war period in Trieste where, unlike in the rest of Italy, the government by the US and British military (1945-1954) promotes contacts and direct exchanges with the cultural world, also regarding architecture. In that fantastic Lignano Pineta, that Sinisgalli defines "lunar city", is the American dream of Marcello D'Olivo. The "short strip of land" of the peninsula gives birth to a "place of peace, if not of utter delight."

Special thanks to: Daniele Milocco, Cristina Driusso, Biagio Russo (Sinisgalli Foundation) and a special mention for Massimo Bortolotti.

BIBLIOGRAPHY

- “Metron”, 41-42, May-August 195.
- Quattro progetti di Marcello D’Olivio, “Metron”, 47, December 1952, 36-48.
- V. Lacorazza, *Tra Wright e Nervi*, “Pirelli”, 2, April 1952, 38-39.
- Libere architetture sulla scia di Wright*, “Domus”, 275, November 1952, 7-11.
- L. Sinisgalli, *Linee Guida*, “Civiltà delle Macchine”, 6, 1953.
- A sud di Latisana*, in “Domus”, 297, August 1954, 1-10.
- L. Sinisgalli *Una città è nata in mezzo agli alberi e le acque*, “Civiltà delle Macchine”, 4, July 1954, 37-40.
- Inaugurata al CAF la mostra del progetto dell’arch. D’Olivio*, “Messaggero Veneto”, 19.9.1954.
- Una innocente mostra e una accesa polemica*, “Messaggero Veneto”, 26.9.1954.
- Ancora la parola al presidente dell’Azienda*, “Il Gazzettino”, 12.10.1954.
- Il piano regolatore di Lignano penisola*, “Messaggero Veneto”, 12.10.1954.
- M. Anzil, *Lignano, ieri oggi domani*, in *XXX Congresso della Società Filologica Friulana*, Udine 1955, 33-36.
- L. Sinisgalli, *Dentro la spirale*, in *XXX Congresso della Società Filologica Friulana*, Udine 1955, 37.
- M. Parrella, *La città a girasole*, in “Civiltà delle Macchine”, 4, July-August 1955, 28-29.
- M. Parrella, *Recenti costruzioni di Marcello D’Olivio*, in “L’Architettura. Cronache e Storia”, 35, September 1958, pages 296-307.
- M. D’Olivio, *Da San Domingo a Libreville*, in *Discorso per un’altra architettura*, Casamassima, Udine 1972,
- G. Cojutti, G. Cola, L. Damiani, *Lignano Pineta vent’anni*, Grafiche Del Bianco, Udine 1974, 13.
- J. Sergeant, *Frank Lloyd Wright’s Usonian Houses. The Case for Organic Architecture*, Whitney Library of Design, New York, 1976.
- L. Sinisgalli, *Edoardo Persico e la crisi dell’architettura*, in *Promenades architecturales*, edited by P. Portoghesi, Pierluigi Lubrina editore, Bergamo 1987, 52.
- F. Tentori, *Friuli: anni 50*, in *Friuli Venezia Giulia guida critica all’architettura contemporanea*, edited by S. Polano e L. Semerani, Arsenal editrice, Venice 1992, 150.
- S. Poretti, *La costruzione*, in *Storia dell’architettura italiana. Il secondo Novecento* a cura di F. Dal Co, Milan, Electa, 1997, pages 268-293.
- P. Nicoloso, *Lignano (1952-63)*, in *Marcello D’Olivio architetture e progetti 1947-1991*, a cura di G. Zucconi, Electa, Milan 1998, 33-49.
- A.G. Rossari, F. Lehmann, *Wright e l’Italia, Wright and Italy*, Unicopli, Milano 1999.
- M. Casciato, *Wright and Italy: the promise of organic architecture*, in *Frank Lloyd Wright: Europe and Beyond*, edited by A. Alofsin, University of California Press, Berkeley 1999, 76-99.
- P. Di Biagi, *Da Lignano a Ecotown: il disegno di un’utopia*, in *Marcello D’Olivio architetto*, exhibition catalogue edited by P. Nicoloso e F. Luppi, Mazzotta, Milan 2002, 13-14.
- M. Casciato, *Frank Lloyd Wright, una Musa probabilmente*, in *Marcello D’Olivio architetto*, 29-37.
- S. Poretti, *Il vizio del cemento armato*, in *Marcello D’Olivio architetto*, 45-54.
- F. Borrella, *Una biografia*, in *Marcello D’Olivio architetto*, 92-98.
- P. Nicoloso, F. Luppi, *Lignano guida all’architettura*, Pordenone, Biblioteca dell’Immagine, 2002.
- D. Barillari, *Allied Military Government: la nuova committenza*, in *Trieste Anni Cinquanta La città delle forme architettura e arti applicate a Trieste 1945-1957*, exhibition catalogue edited by F. Caputo, City of Trieste editions, 2004, 23-33.
- P.P. Pasolini, *La lunga strada di sabbia* a cura di G. Chiarocci, Contrasto due, Rome 2005.
- R. Martinis, *Frank Lloyd Wright, da Taliesin a Venezia*, in R. McCarter, *Frank Lloyd Wright*, Bollati Boringhieri, Turin 2008, 229-262.
- G. Anzil, *Chiacchierata di un testimonia Lignano Pineta (1953-1963) luoghi, persone, lavori e amori*, Zanetti printing company, Codropio 2008, page 23.
- R. Martinis, *Angelo Masieri e Bruno Morassutti*, in G. Barazzetta, R. Dulio, *Bruno Morassutti 1920-2008*, Electa, Milan 2009, 19-23.
- J.M. Siry, *Wright’s Guggenheim Museum and later modernist architecture*, in *The Guggenheim Frank Lloyd Wright and the making of the modern museum*, Guggenheim Museum Publications, New York 2009, page 43.
- R. Cleary, *Frank Lloyd Wright and the Romance of the Master Builder*, in R. Cleary, *Frank Lloyd Wright from within outward*, cat. mostra, Skira Rizzoli, New York 2009, pages 47-57.
- M. Marefat, *Wright in Baghdad Urban life more beautiful*, in R. Cleary, *Frank Lloyd Wright from within outward*, pages 74-91.
- G. Volpe, *Sinisgalli e gli architetti*, in *Un “Leonardo” del Novecento: Leonardo Sinisgalli (1908-1981)*, edited by G.I. Bischì e P. Nastasi, “PRISTEM Storia Note di Matematica, Storia, Cultura”, 23-24, Bocconi University, Milan 2011, 71-125.
- Il guscio della chiocciola. Studi su Leonardo Sinisgalli, a cura di S. Martelli e F. Vitelli, EDISUD Salerno-Forum Italicum Publishing, Stony Brook (NY) 2012.
- F. Canali, *La promozione della modernità: la stagione delle mostre internazionali di architettura a Firenze, 1951: “Frank Lloyd Wright sixty years of living architecture”... e il contributo di Oskar Stonorov, di Carlo Ludovico Ragghianti e di Edoardo Detti*, in “Bollettino della Società di Studi Fiorentini”, 21, 2012, 52-88.
- G. Russo, *Il furore dei numeri e quello poetico*, “Corriere della Sera”, 13.12.2013.
- AA.VV., *Civiltà del Miracolo*, edited by G. I. Bischì, L. Curcio, P. Nastasi, Milano, Egea, 2014.

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