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# The Founding of a City: Construction Techniques between Innovation and Tradition in Littoria

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**ABSTRACT**

The founding of the city of Littoria (then Latina) in 1932 represented a nearly unique event on the European scene of those years, both for the speed with which it was completed, both for the fact that a single designer (Oriolo Frezzotti, 1888-1965) created the urban plan, the expansion plans and all main buildings.

The great constructive and stylistic uniformity that characterizes the buildings of the city is due, as well as to the only designer, even to a variety of economic, social and political factors. The first factor was the autarky, imposed by economic sanctions suffered from Italy after the invasion of Ethiopia: the requirement to reduce the use of iron, and therefore of the reinforced concrete, involved the use of traditional construction techniques, such as the bearing stone masonry with double row of bricks, alternating each 1,5 metres, the continuous foundations in rubble stone masonry (named "alla Romana") with brick vault, the wooden window frames.

The adoption of traditional techniques was also necessitated by the lack of technical preparation of the manpower, consisting mainly by the settlers, mostly veterans of the First World War. The desire to rebuild an environment familiar to the settlers themselves, involved the choice of rustic materials, simple finishes, that confer a rural appearance to buildings: hence the use of the plaster coatings façade, of travertine to the basement, and the use of types of buildings tall than two floors.

Equally crucial was the imposition of an extreme speed of implementation, ordered by the fascist regime for propaganda reasons: this fact determined the use of replicable elements, built outside work: floors with steel beams and prefabricated brick, Palladian trusses for the roofs, false ceiling with “camera a canne”.

All these elements merged in building regulation, drafted by the same Frezzotti, which contained strict and detailed constructive requirements for construction.

**KEYWORDS:** Construction techniques, masonry, city of foundation, fascist new towns, Littoria, Oriolo Frezzotti

## 1 THE ECONOMIC, SOCIAL AND POLITICAL BACKGROUND OF THE FOUNDATION OF LITTORIA

The foundation of the city in the Agro Pontino, with particular regard to Littoria, is a key to understanding the situation that Italy lived in the 30s of the twentieth century. It was a complex experience, deeply influenced by the social and economic conditions of the nation and by the policies adopted by the fascist regime. In particular, the role in land management attributed to the new city, and to Littoria in particular, influenced the form of the construction and the technical and procedural requirements relating to the final appearance of the buildings. Following the "speech of the Ascension", pronounced by Mussolini in parliament May 26, 1927, were cleared the key points of the territorial reorganization required by Fascist regime.

The foundation of the new towns and the intense building activity started responding to a number of requirements:

- absorbing the large number of unemployeds**,** a result of the crisis caused by the Great Depression and, before that, by the Great War. In particular, trying to re-introduce in the working world the veterans of the war, first transformed into workers in the construction industry and then into settlers.
- Avoiding the concentration of citizens in major urban centers. The industry, under renovation, was not able to absorb the masses of farmers who left the country to congregate in urban peripheries increasingly degraded.
- Reviving agriculture, understood as the driving force of the national economy. The goal was to balance the relationship between city and country, in order to "evacuate the city," as expressed by Mussolini still in an article published in "Il Popolo" in 1928.
- Strengthen the reorganization plan of the territory, which started with the reorganization of the provinces.
- Providing the infrastructures of the country, particularly in the areas of reclaimed land, with all those services that are essential to the economic recovery of the territory and to its political and administrative control.

In this economic perspective, in the early stages of reclamation, from the point of view of fascist propaganda, the foundation of the city did not play a central role. The regime saw the absolute priority in the development of agriculture and countryside, heavily focusing on the concept of rurality. For this reason, Mussolini, at least at first, did not want that the new agricultural centers were called cities. During the laying of the foundation stone of Littoria, he rebuked Orsolino Cencelli, ONC President, for giving this event the significance of a strong urban presence in the reclamation plan. Not long afterwards, Mussolini change his mind, as soon as he realized the extraordinary impact that the construction of the new centers had on national and international public opinion and the extent that this could have on the entire fascist propaganda. Finally, Mussolini took advantage even of those buildings to make it one of the most effective tools to establish a new relationship with the peasant masses and even more to showcase the great successes of the regime's policy. Consequently, it was impressed with an acceleration to construction activities: the factor of the speed of execution of the works oriented course the choice of modes of the same building. The changing vision of the regime on the issue of urbanization of reclaimed land also acted for Littoria the transition from rural village in the province, resulting in a change in the style of its architecture, construction techniques and materials.

To these factors, starting from 1934, the choice of autarchy was added, as a consequence of the economic sanctions imposed on Italy by the international community after the invasion of Ethiopia. The choice to strongly reduce imports from abroad involved modifications in construction, in particular as regards the choice of the construction systems and materials to be taken.

Besides the economic and planning aspects, there were also aspects related to the search for an architectural style appropriate to the new city and to the architecture of the fascist regime in general: Littoria was the field in which they confronted rationalist, futurists, vernacular and "Novecento" style buildings.

All aspects described above had significant effects on the built form of the city of Littoria.

## 2 THE STYLE OF LITTORIA

The fact that Littoria is a city of foundation, decisively increases the weight of all the social, economic and political factors that have determined the architectural style and building techniques. It is a city that rise up in a very short time: the urban design dates back to 1932 and the inauguration of the city took place in December of the same year. It is therefore a building fabric completely devoid of its historical evolution and of the temporal stratification that generates a complexity and a plurality of styles and techniques. Consequently, already in the historical background, the final image tended to a strong constructive and formal homogeneity, an "hic et nunc" of Italian architecture of the fascist regime, in an peripheral and decentralized urban environment. Littoria is also a rare case in the history of architecture, in which urban planning and architectural design of the buildings go hand in hand. Indeed, in the pontine city, the author of the urban plan and the designer of most of the public buildings are coincident: in fact, the Roman architect Oriolo Frezzotti (1888-1965) was commissioned to prepare all projects. Despite Frezzotti, in limited cases, tries to experiment with different shapes and styles, the style adopted in the majority of the buildings is very homogeneous and uniform.

Figure 1: The Town Hall of Littoria, by Oriolo Frezzotti

The role of the client, namely the fascist regime, was instrumental in a decisive manner. All the political and economic conditions described in the previous paragraph, translated into a specific architectural form. In the intentions of the regime, the city would have the role of the center of

government of territory and rural villages, within a system that is connected to the management and exploitation of agricultural land. The inhabitants were, in large part, the veterans of World War I, many of them farmers from the Veneto Region. From the point of view of architectural and formal choices, the goal was to create a city strongly characterized by a rural image, creating a family environment for the settlers themselves. From the point of view of the shape of the buildings, there is a choice of simple volumes, structured by elementary masses and through pure and streamlined lines, which leaves no room for decorativism. Important the use of the arcades, which draws an image of vernacular architecture. The choice of the arch on pillars refers to the image of the typical rural buildings. The porch he also had the task of characterizing the public spaces, unifying the built sides, recalling the images of traditional squares. Finally, the porch suggests a dimension of a choral and social space, which reports the surrounding environment to the human dimension, placing it in a context that does not belong to the image of the metropolitan area but that of the country life. Also important is the use of molded elements, window frames and architraves, which are simplified in their form. The goal is to suggest a monumental humble public building, more in keeping with the non-urban settlement. Also the treatment of material surfaces is not secondary in this matter: there is a clear preference for rough surfaces, often with the use of ashlar, with stone basements and elevated of brick or plaster, which, also in coloration, recalling a ernacular and traditional aspect. The Town Hall, designed by Frezzotti in Piazza del Popolo, the main square of Littoria, is the symbol of this figurative approach. The basement consists of a porch, with square pillars supporting a high architrave, all covered in travertine. The upper floor is brick, with window frames still in travertine. The architraves of the windows, as well as all the moldings of the building, are articulated through bands and slats in square section. The central part, which occupies three spans, entirely covered in travertine, is characterized by the presence of round arches, and by the high stone tower with the clock.

The topic of the tower is another typical formal element of Littoria and of the foundation cities in general. In fact, the tower seems to want to establish a direct relationship with history: in symbolic imagery built by the Fascist regime, to establish a relationship with the population, the tower calls the civic sense of the medieval towers, the birth of Italian municipalities, representing the sense of community and warns recalling the presence of political power.

The demand for a high speed in the construction, imposed by the regime for propaganda purposes, influences the built shape for two main reasons. First, the request resulted in the reduction of the works carried out on the construction site and preference for elements manufactured off site and assembled on site, such as the trusses for roofs and iron beams for the floors. Secondly, the high speed in the construction married perfectly with the aesthetics of Futurism. The images of the machines employed for the reclamation, the symbolism of the triumph of man over nature, the incredible speed in the transition from a marshy and unhealthy to an urbanized and productive area, they found a perfect consonance with the futurist rhetoric. Littoria became the field for architectural experimentation of this cultural movement, materialized in the two buildings designed by Angelo Mazzoni, the railway station and the post office building. The second, in particular, is a building of great novelty in the Italian architecture of the '30s. Made of brick and travertine, has two characteristic features from the formal, technical and constructive point of view. The first is represented by anti-marsh mosquitoes semi cylindrical gratings, realised without welding and only with fixed jointed and nailed elements. They were also disposed in a serial way, to create a waved semitransparent metallic wall, made of aluminium and copper. Those elements were able to transform a functional element into an original invention, looking, with the extroversion of this metallic wall, both as the aircrafts cockpits, and at the same time as the factory (Fittipaldi, 2009). The second element was the external climbing stairway: realized in reinforced concrete, covered with bricks, with a parabolic arch form, the stairway was the scenographic transposition of “profferlo”, that is the external stairway of the ancient typical rural buildings, which linked the shops of the ground floor to the house at the top storey. The stair of the post office was at the same time a refined reinterpretation of the rural house and a relevant reference to the futurist idea of fast moving elements, with his parabolic arch (Fittipaldi, 2009).

Even the circular windows of the station are a reminder to the aesthetics of the factory typical of Futurism.

## 3 THE CONSTRUCTION TECHNIQUES

Let us now analyze the construction techniques most commonly used for the construction of the buildings of Littoria, particularly those built around 1932, before the proclamation of the province. The information is obtained, as well as from direct observation, by a number of original documents, such as building regulations of the city, the report to the executive plan (drawn up by engineer Ugo Todaro in December 1932), the individual reports or metric computations of the various buildings, drawn up by individual designers

From a structural point of view, most of the buildings are made in masonry bearing. Only in cases of special static and constructive requirements, it was allowed to appeal to a supporting structure made of reinforced concrete.

Starting from the foundations, required that they were resting on the high strength rock, suitably reduced in horizontal planes. If the ground did not have the necessary strength, it was recommended the creation of a continuous foundation platform. From a technical point of view, in most cases, the foundations were made with continuous masonry called "a sacco", or with external facing of brick or stone and inner filling with loose material, bonded with mortar. The waterproofing was obtained by layers of asphalt. As a binder, was prescribed the use of cement or hydraulic mortar. To insulate the floors to the ground, he realized a crawl space in stone and river pebbles, resting on a system of vaults named "alla Romana": it was a system of brick walls, parallel, connected by small barrel vaults of bricks, that supported the crawl space itself.

The walls were usually of bricks or stone. Where were made of hewn stone, he forbades the use of pebbles round, if not conveniently split. When the laying surface was not regular and did not allow a secure implementation of the subsequent rows, was ordered to interrupt the stone masonry with two continuous rows of brick or reinforced concrete continuous bands of thickness not less than 12 cm, arranged at regular intervals of less than 1.50 meters. The use of reinforced concrete structures was very limited, in particular by the lack of a good sand in the Pontine area, suitable for the preparation of the same concrete. Generally, the use of concrete was confined to the implementation of continuous ring beams placed in the walls at each floor on all the external walls. These ring beams were to have the same width of the underlying wall and a minimum height of 20 cm.

The floors, given the demand for a high speed of construction, were made with the system of iron beams connected by vaulted of brick or brick hollow flat blocks. The beams were to rest on the masonry for at least 2/3 of the thickness of the walls themselves; were anchored to the masonry by means of metallic elements such "Bulzoni". In the case of adjacent rooms, the beams of a compartment should be linked with those of the neighboring room in correspondence with the common wall of support. On top of the beams and brick elements, the structure was completed by a cast in concrete, to achieve the horizontal decking, to finish with the installation of the floor. In cases where the execution was better taken care of, in order to obtain a continuous intrados of the floor, entirely in brick, were arranged some rebar cover elements in brick, which covered the wings of the I-beams.

The upper floors of the first, were prohibited the structures thrusting against the outer walls, unless they were equipped with chains to undo thrusts. Even the roof had to be made in order to avoid horizontal thrusts on the underlying structures.

The roofing were usually in the pitched-roof, with wooden trusses and brick tiles, waterproofed by the underlying layers of lead.

To hide the structure of the roof from inside, were realized the false ceilings with the system of "camera a canne": a warping of wooden beams hung with metal rods to the supporting structure of the roof. To this elements, was connected a lathwork equipped with a dense metal mesh, which served as a support for the plaster.

Figure 2: constructive section of a typical building of Littoria

The external cladding works were generally brick or cut stone, travertine or Veio stone. Internal ones, very limited, travertine, peperino stone, cipollino, Trani stone or Nabrosina marble. The window sills were made of travertine, door sills and balconies made of Carrara marble, the coatings of the stairs in Bardiglio (with the exception of the town hall, stone of Trani). The same materials were used for the

floors of the most valuable buildings, together with Carrara marble and the Black Belgian. In most cases, however, were provided with expensive materials, bricks, Venetian mosaics, and stoneware tiles.

The plasters were generally ordinary, exceptionally polished stucco or faux marble or faux travertine. The interior walls did not coating, but they were usually painted, rarely varnished.


Figure 3: Palace of the Italian finance police of Littoria (left), Palace of the Province (right), both designed by Oriolo Frezzotti

When in 1935 Littoria becomes the province, the biggest changes concern the most monumental public buildings and a greater wealth of materials. The buildings are approaching, in a simplified and less "cultured" form, to the style that, starting from the creation of the university city of Rome, would find its fulfillment in the exposition of the E42. As for the materials, increases the use of stone cladding, in particular for the interior, which acquire more decorative richness. In this context, it increases considerably the use of artwork and sculpture, in particular as a decorative element in buildings, both in the facades and interior. The most frequent subjects are those that celebrate the works of the Fascist regime and in particular the reclamation of the Pontine marshes. A key element is the figure of the settler who, with his work, ennobles and redeems the earth.

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