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Our *Italian Houses* – public housing heritage as well as private developer settlements of the last thirties years – are expensive, inefficient, energy-consuming, too big, without a proper and/or updated lay-out, not designed for modern uses and actual-sized families. In one word: they are *old*. Starting from the 1990s, there are many examples of remodelage and renewal of social housing neighborhoods that took place in the United States as well as in some areas of Europe, where countries such as Germany, the Netherlands, the United Kingdom, France, made a widespread policy of renovation, while Southern European countries are still more vulnerable in terms of strategies. The volume focuses on Italy, on its delay and attempt to recover its buildings, adapting them to the current regulation and new contemporary living. Careful observations about social housing, new typologies, standards and technologies, without forgetting the energy retrofitting, to gear their architecture layout, to integrate them with urban facilities.

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New Perspectives in Social Housing

Antonello Boschi, Luca Lanini

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New Perspectives in Social Housing

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Luca Lanini

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for the energy performance and no government subsidies are used. To date there have already been interventions on about 200 prototypes and pilot buildings and 10.000 Net Zero Energy retrofits are expected to be completed by the end of this year.

What kind of approach do you use for retrofitting operations?

Starting from the premise that energy renovation of the public housing stock mainly has a political and strategic importance and as such must be addressed at the overarching policy level, graduate theses in particular can experiment with innovative approaches that take into account the need for process control digital tools (BIM) through all of the stages. This is crucial for time reduction purposes and costs and to ensure compliance with the project goals established. The most troublesome part naturally concerns finance and the acceptance of projects by the residents. There is still a long way to go on these issues.

What are the technologies that can contribute most to the retrofitting of public housing stock?

The Dutch experience in Energiesprong, which will be followed shortly by France and the United Kingdom, shows that, in implementing the Paris COP21 commitments, it is necessary to intervene on large portions of the housing stock by means of major renovations. The problem is not the application techniques. The only way to achieve the objectives is the digitization of the entire process, creating a chain of efficiency based on *Collaboration, Coordination, Integration and Systems*. Funding is central to the issue in a sector having little or no interest for investors.

What do you think of using dry prefabricated systems (for retrofitting)?

I think their use is particularly interesting as they have little impact on the basic structure and especially since simple construction interventions allow for dosing the lamination according to the demand and facilitating maintenance processes. In this way a building can be taken care of throughout its life cycle, prolonging its use.

In your opinion, what regulatory instruments could be useful to encourage the renovation of the public housing stock?

It is difficult to answer this question. This is the real kernel of the issue. But typically it is a matter of social and financial policy. Let us say that mechanisms for implementation and financing need to be put in place and adapted to the complexity of the housing stock which is characterized by significant debt arrears, involving and financially motivating public and private organizations (ESCOs, for example) through the development of specific financial incentivizing mechanisms.

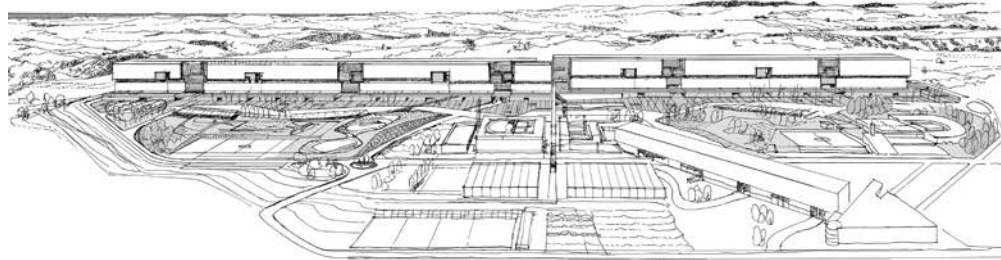
Regeneration of Corviale: Competition Project, Rome

Filippo
Lambertucci,
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Lanini,
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Battisti,
Fabrizio
Tucci

Corviale is a huge building, over one kilometer long located in a peripheral part of Rome. Out of scale dimensions, several errors made during the design stage as well as poor post-construction management has made this building a living icon of the failure of social housing strategies of the 1970s in Italy. The project we submitted in 2015, at the competition for the regeneration of the building, was awarded the fourth prize and special mention. Our regeneration hypothesis for this colossal building, a true wreck of architectural utopias and languages, is the result of a multitasking strategy regarding the whole building and – given its scale – it also includes our idea of a landscape (fig. 1). Together with this general strategy, a secondary strategy of punctual interventions aims to affect the use of the building at smaller scales.

From the point of view of the general strategy, we felt that the main character of the building, the uniqueness which justifies the existence of such a “hard” architectural object, was its size; for this reason, our intention was to reaffirm that the presence of an over-one-kilometer long building in a contemporary city can be congruent (and maybe desirable). And, indeed, this identity cannot be denied through a series of “ornamental” interventions, but it must be emphasized, highlighting the great horizontal development of the building and accentuating its character of architectural barrier of the urban development of the city of Rome: the architecture of Corviale coincides with its titanic size and therefore it needs to be clarified, to be fully understood and appreciated.

All proposed interventions will be coherent with this approach: the great linear road placed at the foot of the building, the roof as an energy-producing machine, the circuit of outdoor activities, the dismantling of the monumental stairs and, finally, the huge artistic intervention (designed by the famed Sergio Fermariello) not merely decorative, measured on the building’s “colossal” scale (fig. 2). There are also a number of specific, iterated interventions, whose aim is to make the huge size of Corviale acceptable for a residential community: the general principle of emphasizing the territorial “gigantic” dimension is counterpointed by smaller interventions, all directed towards separating

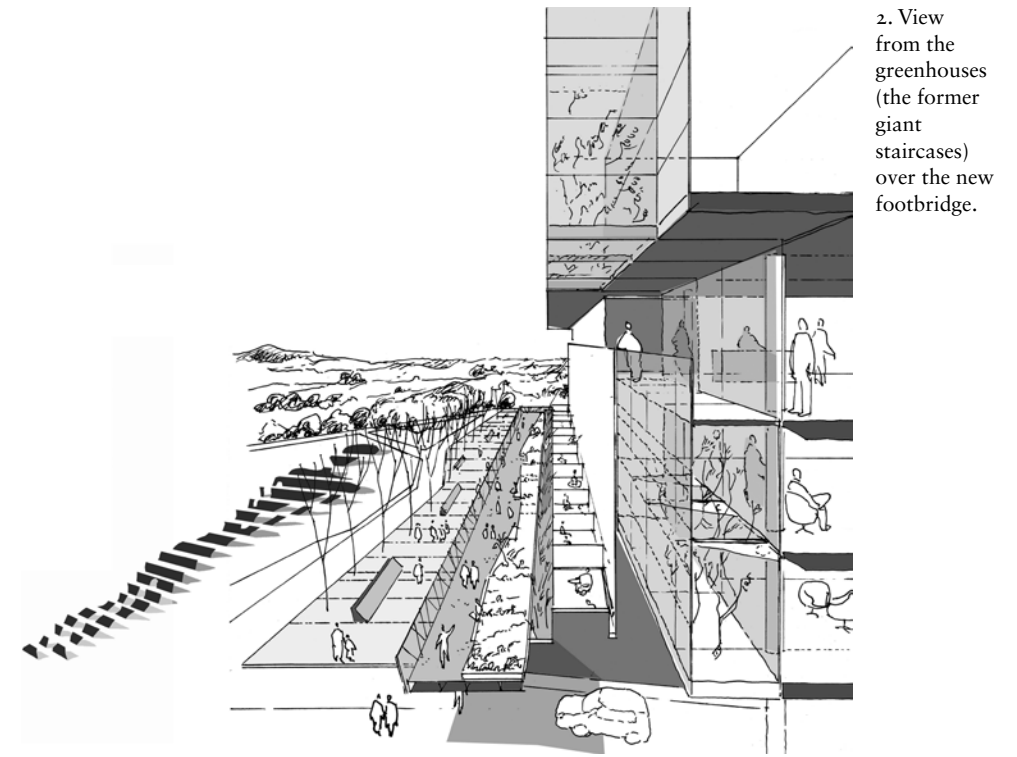


1. Aerial view: landscape is the scale.
Design Team: Filippo Lambertucci (team manager), Pisana Posocco; Luca Lanini, Manuela Raitano, Alessandra Battisti, Filippo Tucci, Claudio Politi (Sociology), Alessandra Di Giuseppe (Economy), Sergio Fermariello (Artist).

the building in different partitions to obtain more controlled, safer and friendly environments. In particular, our attention focused on the building's ground level, which influences and determines the public and private attitudes of inhabitants in the use of space.

The building's footprint has been reshaped by arranging a number of public spaces and functions at the ground level; the road to the car park has also been transformed in a low speed hybrid road for vehicles, cyclists and pedestrians (technically an "area 30", where 30 km/h is the maximum speed allowed). This operation required a general reorganization of the road system, which also allows a frontal approach to the building. It is also expected to separate the internal distribution in two main flows: one relative to residential blocks, the other to the large condominium halls, which have been enhanced with dedicated elevators and staircases in addition to a distribution gallery.

Corviale is not designed on a flat area, and parking lots occupy the first two floors of the building. This prevented the ground floor from becoming the access level and an actual public space, as is customary in the European and Italian urban tradition. To reverse this condition it has been necessary to carry out a comprehensive reorganization of the building's entire ground level, intervening on the slabs and on the partition walls of the car park by completely demolishing the intermediate slab which separated the entire parking area in two constricted floors (fig. 4). To strengthen the architectural idea it was decided to deny the symmetry of the architectural section, forcing the public aspect of the east front, where 5.000 sq.m. of facilities and shops will be allocated, as requested by the competition program; meanwhile, the stores will be relocated on the opposite side, on the west front of the building. New public spaces giving access to the former condominium halls, in addition to new hallways leading to private stairwells, will be placed along the east front of the building. One of Corviale biggest problems was the presence of the former condominium halls inside the building. Their unspecified role, as well as their maintenance, transformed them in parts viewed as foreign, never fully used by the inhabitants. These common spaces have

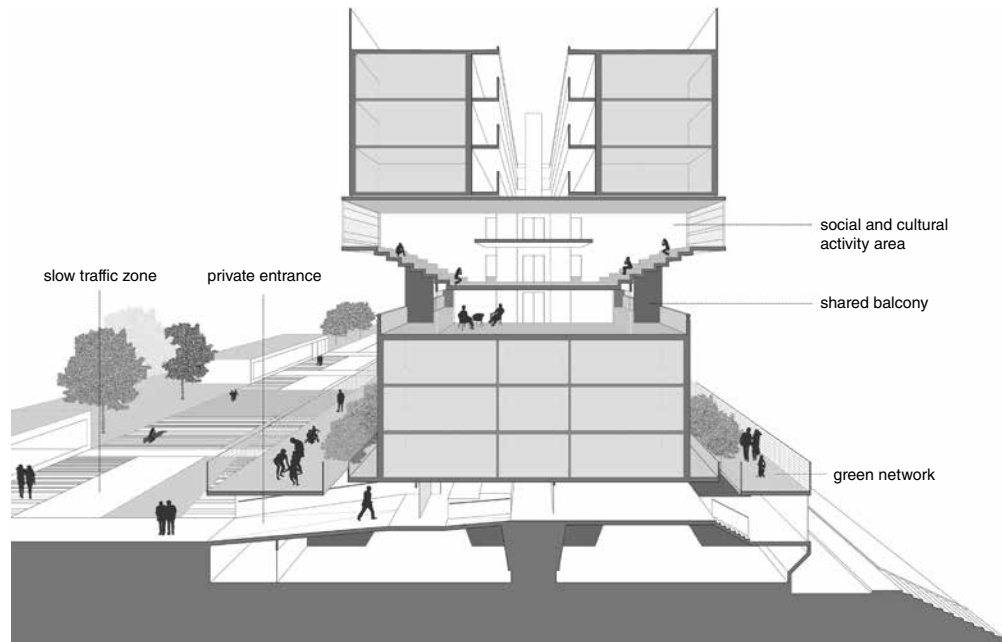


2. View from the greenhouses (the former giant staircases) over the new footbridge.

therefore been redesigned to accommodate new public functions at the urban scale. The vertical cores that allow their independent use will be made easily recognizable and accessible from the ground floor, with a double entrance archway.

Furthermore, the fabric of Corviale is now disrupted by five monumental stairwells, which we proposed to dismantle, as we consider them not to be congruous with a ground level redesigned as a succession of private entrance halls. They have been substituted by large volumes containing co-working spaces, bioclimatic greenhouses etc., thus reconstructing the continuity of the front (fig. 3).

Finally, on the roof of the reorganized ground floor there are two green circuits covering the entire length of the building. The south part of the circuit is mainly dedicated to cycling and walking; the north part of the circuit allows outdoor activities. In this way, we reshaped the roof with a high level linear park, appropriately separated from the windows through a gap, the void of the downstairs patios. As a result, Corviale's main weakness, its excessive length, has become its strength, allowing the use of the building as a device for activities that require such long and linear spaces (running, walking, cycling). According to the same principle, where the long block is split in two, we imagined the



3. Cross section through the public halls and related entrances, on the right is the elevated pathway.

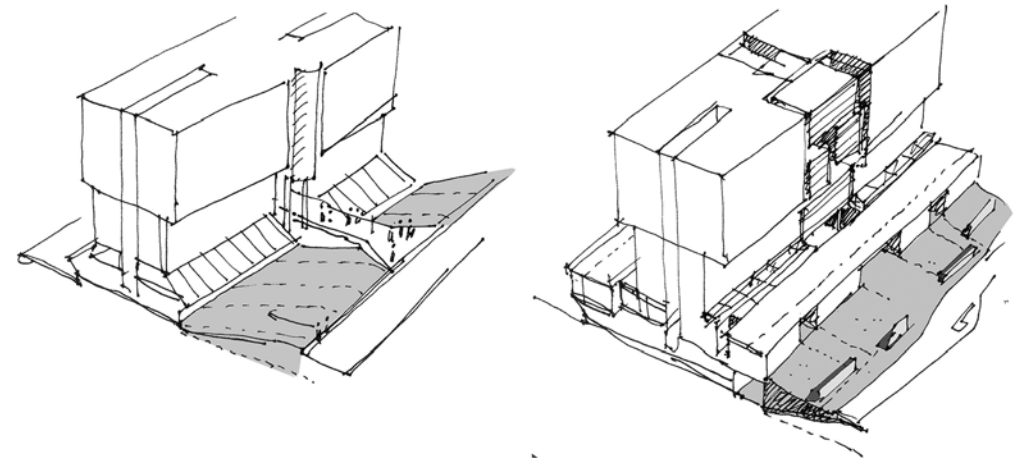
inclusion of a free climbing structure on blind walls, so that the entire building can become a new symbol of urban leisure (fig. 5).

In the case of large housing complexes such as Corviale, or in the great period of “167” neighborhoods, popular discontent has usually surged. Quite strangely, the dislike for this kind of housing complexes is not directed towards buildings defined by low architectural quality but mostly against those “signed” by famous architects, qualified by a great social and architectural commitment. Surely, the method of allocating inhabitants in these new urban structures and the management of these huge communities was extremely difficult and defeating. Therefore, we intend to promote the active and formal involvement of the inhabitants in the management of the architectural heritage: the idea is to create a cooperative real estate company dedicated to the direct management of spaces (sports facilities, former condominium rooms, shops, co-worker areas, etc.). This solution can promote the collective use of Corviale, otherwise destined to be abandoned and neglected. Therefore, the participation program will be staged as follows:

Preliminary phase

Programming citizen engagement activities:

- explaining the characteristics of the ‘to be constituted’ real estate company;



- defining the direct involvement of citizens in the process (and their representatives) in the business management of the cooperative company;
- solving the problems linked to areas owned by ATER (i.e. Public Management Company);
- scheduling subsequent meetings with representatives of the inhabitants.

4. The remodeling of the separating slope to create a linear plaza.

Step 1 - Involvement of citizens

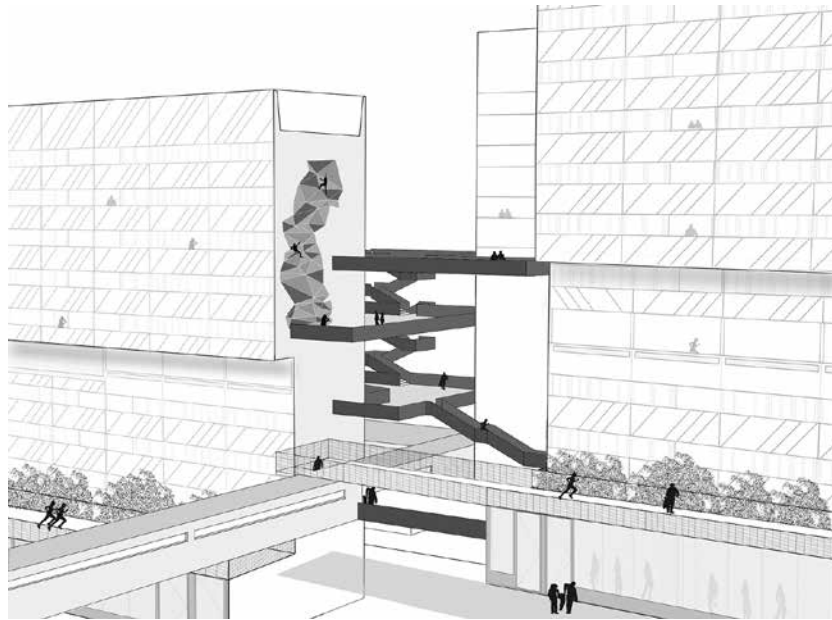
Citizens will be asked to choose how to manage the newly-formed cooperative, according to an open policy defined during the preliminary phase. We suggest three hypotheses on which citizenship will be asked to decide:

- promoting the existing business system entrusting the management of the newly-formed cooperative to an already existing company;
- promoting the employment of disadvantaged groups (unemployed aged over 30, immigrants, etc.) allowing the spontaneous aggregation of people to give them the opportunity to develop a new business project;
- promoting youth (also female) employment encouraging a process that urges youth groups to submit their ideas for the project.

Step 2 - Accompanying the start-up

The constitution of the cooperative will require consultancy coaching; there must be training sessions for the contractors of the call for ideas. All these activities will be carried out in suitable areas within the complex of the Corviale.

5. The climbing wall encrusted amidst the central joint.



Step 3 - Start-up and Promotion

At the end of the training there expert assistance must be provided to start the activity. The startup will be accompanied by an awareness/information campaign to direct beneficiaries (users of services) and stakeholders (local associations, institutions, etc.).

Conclusions

The spirit is to promote a shared process, in the perspective of social sustainability. It must be carried out not only in the form of the involvement of the inhabitants in the newly-formed cooperative enterprise, but also by expanding the services and the facilities which already exist in the neighborhood. The regeneration of Corviale also takes place through the identification of energy issues regarding both active and passive systems. The main passive bioclimatic systems used in the project are the following:

Greenhouses

Five large solar greenhouses are located in the five former monumental stairwells, in addition to other various functions. During the winter they pre-heat the air which is directed to fan ventilation towers. During the summer, the glazed surface of the greenhouses is shaded and opened during the day, and at night it is opened to natural ventilation for cooling.

Geothermal surface

During the summer, the thermal inertia of the soil is exploited, providing natural ventilation through the ducts in the backfill. These ducts carry cooled air, originating from the heat exchange with the ground, along a path which is several meters long, up to the parking countertops in the basement of the building and from there to the ventilation towers located behind the elevators.

Ventilation towers

During the winter, the pre-heated air coming from the greenhouse is forced through a duct located at the top of the building, under the photovoltaic panels and is transported up to the towers located behind the elevators (reaching 16°-18° C) where a heat exchanger connected with the tower of extraction of waste air (which comes out at 21°-23° C) is located; through the distribution tower (vertical) and the ducts (horizontal to each floor) the treated air is introduced in the flats (3-5 flats for each tower) at a temperature of 19°-20° C. During the summer, the same towers (with the same ducts on each floor), connected from the bottom to the geothermal system, will bring natural ventilation and cooling within the flats, maintaining the temperature below 26° C.

Buffer spaces

Offices located in the former monumental stairs are provided with buffer spaces on the south-east front, which in winter allow the triggering of greenhouse and passive heating and the reduction of heat loss in the north-west front, characterized by low-emission glazing.

During the summer, the double skin constituting the glazed buffer space opens up to natural ventilation.

Active solar systems/Pv-Solar Panels

On the rooftop there are 8.155 m² of monocrystalline PV panels which annually produce 3.26 million KW/h. The micro wind turbine system consists of about 500 turbines with horizontal blades, tot. height (pole + turbine) = 3.00 m., placed over the top of the building, hidden by the high balustrades and therefore not visible on the exterior, annually producing 3,000,000 KW/h.

Ecological water recovery system

A rain water recovery system is provided on the roof, to be used for the irrigation of the green areas below. The total accumulation is approximately 16.900 m³/year.

Energy results

The complete set of passive bioclimatic measures produces a reduction of the energy needs amounting about 45%. The production of electricity from renewable sources on the rooftop (solar energy + micro wind turbines) gives an important contribution that covers 130% of the total energy needs, with a surplus of about 30% energy (which could be given to the electric car sharing system) according to the most virtuous NZEB model, described in the last DL/1 October 2015 for energy efficiency.

Inhabiting the Crisis: Renovation of Torri Ligini, Rome

Ilaria
Battaglia

Living in daily instability, in “a liquid world”, according to Bauman’s definition, means facing the contemporary crisis which has certainly been emphasized by the financial crisis, booming in 2008, even though it does not only concern this aspect of society. In fact, it has been defined as a pervasive, critical condition of the entire contemporary life. We can find evidence of this in the political instability of democracies, in terrorism, radicalism, and in environmental threats, as well as in the inequality affecting education, careers, material goods and quality of life. Existential inequality simply erases social cohesion, makes individuals accustomed to pain and lacking in feelings. That is why this paper starts from the analysis of society itself and from the analysis of different types of dwellings. A multidisciplinary approach has given us the chance to study the contemporary scenario, regarding the socio-economic situation, dwelling criticisms/critical issues? and parameters, and models of spatial perception.

Socio-economic data highlight the necessity to continue working on housing programs. Starting from 2006, the urban population has exceeded the rural population, and by the first half of the 21st century, seven out of ten people will live in urban areas. From the year 2000 to 2014, the number of people living in *favelas* and shantytowns increased by 55.000.000 units. By 2030, 3.000.000.000 people (40% of total) will need a house and this demand would be satisfied by building 96.150 new houses each day. Moreover, both “developing” and “developed” countries share the same model for new urbanization: low density suburbs which imply the reduction of farmland, increasing amount of private cars, expanding road network and complex basic services such as water, electricity and public transportation, due to the extended area to be covered. A brief research on the housing market reveals the amount of unsold, empty houses certainly due to the downturn, but it also highlights the need for social housing which actually remains unsatisfied, therefore, the supply does not match the demand. Other relevant data to be considered are the energy consumption of cities and buildings and the quantity of greenhouse gas emissions. Despite the fact that cities only cover 2% of the Earth’s surface, they use up the

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