

The integrated requalification of author's urban Italian peripheries.

Strategies and technological environmental solutions for a balance between sustainability and safeguarding existing value.

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Abstract

The actions to be taken on the residential buildings of the Italian urban peripheries need new tools, starting from the identification of contemporary architecture with characteristics of quality, within the field of recent building production (MiBACT, 2014). Although they are included in the Cultural Heritage concept from an historical-critical point of view - and their subscription within the National Census of Italian Architecture is an evidence of it - still there is not an institutional safeguarding tool and a technological and environmental common strategy that adapts them to the needs of contemporary society, compatibly with the "design intentions" and their quality.

Keywords

"Author's urban peripheries", Cultural Heritage, sustainability, safeguarding of value.

Introduction

The main topic of this research concerns the possibility of identifying compatible solutions for some of the buildings belonging to the Italian building cultural heritage. The architectures focused in this article arised in the second post-war period between the Fifties and the Eighties (law 167/1962), known today as "urban Peripheries". Despite of representing only about 3% of the existing building stock (Rossetti, 2013), they can be considered testimonies of architectural and construction culture of our country. The urban Peripheries, although they emerged to give a sudden answer to the housing and occupational emergency after World War II, have experimented, in the international wake and thanks to the main exponents of architectural culture of the period that signed them, some of the most advanced technologies of heavy prefabrication and industrialization of the castings (tunnels or banches-predalles). For these characteristics can be defined "by Author".

These buildings, more than others coeval to them but belonging to a traditional construction type, are today in a situation of deep and multidimensional decay: often placed on the margins of cities, they show environmental, social and economic problems (Di Giulio, 2013); the characteristics of settlement patterns and building artefacts have in fact contributed to the deterioration of the neighborhoods (Franz, 2005). The conditions in which they look

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do not seem to be tackled through incisive actions, if demolition is assumed, a bankruptcy solution that is not convenient from the point of view of sustainability, in social, economic and environmental terms.

Through the best practice research, the paper i) lays the foundations for a specific technological-environmental analysis to determine the characteristics of quality of these architectures; ii) identifies several types of work adopted and technologies used in the international field and iii) identifies the elements on which to base a methodology for the requalification project of Author's urban peripheries. The paper is part of a doctoral thesis which aims to outline this methodology as its final objective.

The main goal is to demonstrate how, starting from the analysis of the quality of the settlement project, it is possible to identify effective strategies from the point of view of sustainability but also able to produce a redevelopment project that is "resistant, durable, permanent, courageous and above all honest" (Bickle, 2016).

State of art

The recent guidelines from the 2030 Agenda have given, through the Goal 11, particular emphasis on the need to "make cities and human settlements inclusive, safe, resilient and sustainable" and in particular on "ensuring access for all to adequate, safe and affordable housing and basic services and redevelopment of poor neighborhoods" (United Nations, 2015), and they have provided further impetus to the reflections on the theme of Urban Suburbs that were followed in Italy by the birth of the II Periphery Urban Service at the Ministry of Cultural Heritage, and then by the creation of the G124 group by the Senator arch. Renzo Piano.

On these premises and in continuity with the objectives enunciated by the Habitat III Conference and the New 2016 Urban Agenda, through the *Special intervention Program for urban regeneration and the security of the Peripheries*, the *Parliamentary Commission of Inquiry on the security conditions and the state of degradation of the cities and their Peripheries* was established in 2016. The strategic solution proposed by the Commission, following the community indications on land consumption and policies for the redevelopment of the heritage building, is oriented to the recovery of existing complexes with objectives of sustainability and achievement of energy saving targets (Camera dei Deputati, 2017).

The propositions developed in the field of academic research have so far been oriented precisely to the priorities of improving the performance of buildings, neglecting to research aspects of quality intrinsic to the architecture, which, in these case studies, could probably suggest different solutions. The approach to these buildings has in fact looked at functional, energetic performance and perceptive improvement linked to economic needs. The solutions were evaluated within technological, energy, economic and functional priorities; the proposed actions concern partial demolitions, additions and substitutions, certainly obtaining higher

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levels of performance but never oriented towards a balanced strategy that can operate in respect of cultural value. The research and experimentation projects analyzed evaluated an integrated approach to the different scales of the neighborhood, focusing on the concept of urban integration and the green design and proposing, starting from the typological and technological problems identified and the contemporary demand framework, hypotheses focused on building envelope and plant replacement or implementation. The actions on the building envelope followed the model of the requalification projects in progress in other European countries - for example the experimental and innovative experiences of Lacaton & Vassal, extremely significant.

The solutions proposed in the Italian context have provided in fact the addition of volumes on the facade; for the purpose of improving perception and to promote the recognition of the neighborhood have provided the modification of materials and colors, the recalibration of full and empty spaces up to the partial demolition of the volumes (Boeri & Antonini, 2015).

With regards to these aspects, the research deepens the experimentation carried out on the "Le Navi" district of Florence and the COST ACTION TU 0701 "Improving the quality of suburban building stocks", held between 2008 and 2012, and one of his case studies, the Pilastro district of Bologna.

The international scenario proposes instead two different strategies: the first, applied to the building considered ordinary, on which it is possible to act also through substantial transformations; some other experiences of redevelopment instead more careful and recognizing the value of these large buildings that, in some cases, already boast the "label" of cultural heritage. Accordingly, to the intervention on ordinary building, the main case studies of this paper are the Cité du Grand Park in Bourdeaux (France); Park Hill in Sheffield (United Kingdom), the Cité du Lignon in Vernier (Switzerland) and the district Bleuets à Créteil (France) tell instead a *compatible* way of approaching the public residential redevelopment project with industrialized characterization with declination of Author. While in fact the first has developed multiple strategies with substantial modifications, the second experiences, focusing on buildings in many cases already recognized at a cultural level, have instead identified ad hoc strategies compatible with "the author's declination" of buildings.

National approach: analysis of case studies

The Direzione Generale Creatività contemporanea, ex Arte e Architettura contemporanee e Periferie urbane, institutional body in charge on the Contemporary age has already clarified the importance of identifying of quality architectures within the extended field of recent building production. The main tool used was the National Census of Italian Architecture of the second half of the 20th century that allowed to recognize many of the architectures that belong to the model of study - the building of great dimension belonging to the industrialized constructive typology with Author's declination (the "author's declination" as understood in

this research will find further foundation, beyond the bibliographic sources, on the study of the "original intelligence" of the complexes from which it will be possible to define general strategies for the approach to the redevelopment project) inserting them into the census. The criteria on which the Census is based are qualitative and critical type and evaluate bibliographic recurrence, technological, typological, technical and social innovation. Considering already this inscription as an evidence of a recognized value, one wonders if it is possible for these buildings to move the reflection of the requalification project from a strictly performance plan to an implementation plan of the existing technological-environmental qualities in order to identify strategies able to achieve significant levels of performance but also a balance between sustainability, economic constraints and energy problems (Graf & Marino, 2012), as has already happened in design experiments in other European countries.

The requalification of the complex "Le Piagge" in Florence was developed between 2002 and 2008. The retrofitting project on the residential complex that "already in the late nineties it showed strong signs of obsolescence and needed typological and distribution solutions and new interventions on the construction", involved 280 housing units owned by the municipality. The two buildings in line were constituted at each level by an internal distribution tunnel and single-sided simplex and duplex housing, built using transverse-bearing load-bearing technology, which although correctly oriented along the east-west axis, suffered anyway the absence of cross ventilation (Arbizzani, 2015). Following the intervention, the dwellings became 312, transforming part of the duplexes into simplexes, adding new balconies to the duplexes as well as an internal gallery that interrupted the gallery for natural ventilation and lighting. The insertion of a forced ventilation system at very low speed that introduces air from the grids placed in correspondence of the window blinds and expels them from the cavities in the tunnel up to the cover through extractors, offers further contribution. The electrical and heating systems have been replaced, the gray and black water drains have been divided and the existing roof has been changed to a ventilated roof. The replacement of prefabricated reinforced concrete parapets with traditional masonry and tubular handrail was also carried out; balconies equipped with shielding in metal panels. The clad walls and the original ribbon windows divided into smaller portions to limit the dispersing surfaces, equipped with new thermal break windows.

The building complex has also been the subject of a European research entitled SuRE-FIT (Sustainable technologies for interventions of raising of multi-storey residential buildings in Europe) which provided for a redevelopment through the expansion of the volumes in coverage and the renewal of the external envelopes.

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Figure 1 – Renovated complex view with added balconies © Ipostudio.

In 2008 the COST Action TU 0701 was started, “Improving the quality of suburban buildings stock”, in which 22 countries participated; aimed at sharing regulations, measures, strategies and technologies, it was aimed at promoting an integrated approach to the architectural, technological and performance requalification of complexes. This integrated approach has considered some factors including: the quantitative technical demand, the architectural aspects related to evaluations, including those of an aesthetic nature, the social and safety aspects, the environmental and energy efficiency aspects, the structural aspects, the intended use and accessibility, selected because they give rise to measurable and comparable problems. The research, also here, focused on priorities for energy improvement, resulting innovative from a cost-management-impact point of view on the market of the requalification process investigated.

The experiments were carried out on selected case studies representative of a significant sample of participating countries and construction technologies. As far as Italy is concerned, the Pilastro district of Bologna was chosen, the subject of study in the framework of the PRIN 2008 Research Program “Redevelopment, regeneration and enhancement of social housing settlements with high population density built in the urban suburbs in the second half of the 900”. It is one of the largest by extension among those belonging to the study model, occupying an area of about 40 hectares, with 2000 housing and 7500 inhabitants. The “Virgolone” is a curvilinear building that stretches for 700 meters in length, eight floors high and equipped with 552 dwellings through a repetitive aggregation model that is obligatory

at the distribution level by the structural plant deriving from the use of tunnel construction technology. At the scale of the building, the proposed redevelopment project is built on the basis of the analytical survey of degradation factors and energy diagnosis and can be implemented in three phases. From the first, with a lower impact, which provides for the insulation coatings of the opaque envelope, the replacement of the existing single-glazed windows with new thermal break windows. By applying a paneling of different sizes and different shades of green, we arrive at the most complex, which involves redefining the volume of the building, replacing the existing prefabricated panels with other efficient and energy-environmental aspects, inserting volumes for loggias and balconies, up to the addition of self-supporting towers to support the building's seismic behavior. The performance results achieved place Virgolone from a class G to a class D.

Both the experiences approach the building through an analysis based on energy diagnosis and degradation factors; both propose solutions certainly able to reach high performance levels even from the economic point of view but which produce substantial changes, both of the elements that characterize the building and its shape (Boeri & Antonini, 2015). They follow the direction of those experiences of requalification and transformation of ordinary buildings on which it is possible to experiment with solutions of impact and obtain high performative levels, as in the case of the Quartier du Grand Park in Bordeaux signed by the architect. Jean Royer (1903-1981) on which the architects Lacaton & Vassal worked.

The neighborhood of Grand Park has more than 4,000 homes and was the subject of a competition in 2011 for the conversion of 530 apartments belonging to three public housing blocks built in the early 1960s. This task was completed in 2016 with 538 apartments and 23500 square meters of surface in addition consisting of winter gardens and balconies that expand the space of use of the accommodations, offer natural light and a panoramic view of the surroundings, as well as improving the overall performance of the walls, in association with the isolation of the walls exposed to the north. The transparent vertical walls, removed thanks to specific work relating to the risk of contamination by asbestos fibers, have been replaced by sliding French doors; in order to create the compartment for their insertion, the concrete sills were removed through circular saw blades; the thermal curtains placed on the glass slab, provide further support to the thermal insulation of the rooms. The glazed front panel is therefore composed of polycarbonate panels folding like a book and fixed in glass on aluminum frames.

The strategy adopted was therefore that of "building from within that is starting from the needs through the opening of the facade" in the transformation into a new more democratic building that guarantees inhabiting, pleasure and luxury for all, thus renouncing any intervention on the structure, connections and plans (Lacaton & Vassal, 2019). The project was awarded the European Union prize for contemporary architecture Mies Van De Rohe 2019, representing an important achievement not only for designers but above all for the future prospects of European social housing.

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The works on the building production considered ordinary, not all considered iconic as the previous one cited, appear heterogeneous and oriented to a restructuring of performance type that often determines heavy and irreversible actions, not careful of the integrity of the architectural object and therefore of its eventual values cultural.

Actions such as remodeling operations, selective demolition, addition and replacement are all to be considered in the same terms. We can highlight experiences such as of the Balmont bars in Lyon or of the Caravelle in Villeneuve the Garenne of the Castro Denissof Associès studio, or the the Kleiburg de Flat, an author's work designed in the 1960s by the Dutch architect Fop Ottenho; architectural transformations that foresee demolition, rehabilitation and new construction, have generated an irreversible modification of the original building, compromising its qualitative characteristics forever (Graf & Marino, 2012).



Figure 2 – Grand Park before renovation work © Philippe Ruault.

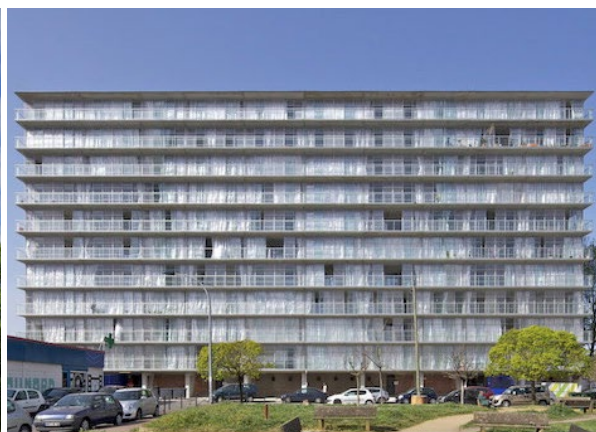


Figure 3 – Grand Park after renovation work © Philippe Ruault.

In the residential building park erected between the Fifties and the Eighties, which is predominantly lacking in architectural value and quality, there is an industrialized building heritage, in Italy equal to about 3% (Rossetti, 2013), built through more advanced construction techniques of that time, elaborated and thought by the best designers of the architectural culture.

Is it possible for this heritage identify a balanced strategy that combines respect for cultural qualities and the need for innovation? Is it also possible to outline a redevelopment project starting from the existing qualities? To investigate an answer it is certainly necessary to deepen some European case studies located in England, Switzerland and France, which have instead experimented with a different approach aimed at providing an answer that combines requests for efficiency with those of safeguarding the meaning of the works, and theirs, therefore, Author's declination.

International approach: analysis of case studies

UK

Park Hill in Sheffield represents a utopian dream of the late fifties; it was designed by architects Jack Lynn and Ivor Smith and built in just three years, between 1957 and 1961, requiring instead a decade to be retrained, following a long period of neglect.

Park Hill has always been considered a project of interest, on the one hand because it was conceived in line with the renewal process that had taken place throughout Europe, on the other because it was inspired by lecorbuserian structures presenting a visible reinforced concrete frame and vertical closures in graduated color bricks, from brown to mustard, from bottom to top. The decline of the building complex began in 1967, with the emergence of social problems related to intensive public housing, which was then associated with a progressive process of marginalization.

In 1998, English Heritage bound the complex (Listed Grade II *) by recognizing the value of the reinforced concrete structure and the residential type inspired by the Unité d'habitation of Marseille: "for its architectural importance, for its innovative use of streets in the sky and its impressive scale". The 1988 listing caused even more debate on the question of its alleged value: one wondered if buildings like this were up to being associated and defined as an example of the highest architectural quality, alongside buildings like Westminster, St. Paul or Stonehenge. Questions that are as relevant as ever, especially in Italy, where for a long time the debate on what could be considered worthy of cultural value stopped at the historical structures.

Today the complex boasts the distinction of being the largest protected residential building in Europe, as well as being a model of residential architecture redeveloped in full compliance with its quality characteristic.



Figure 4 – Daily Wall - Wednesday 23 December 1998, p. 22.

The English Heritage considered it necessary to safeguard only the framed structure, which made it possible to easily transform the existing apartments. The works involved a new internal distribution and the achievement of consequent quality objectives as well as aes-

thetic-formal interventions on the facades, chosen with compatibility criteria with respect to the restriction.

Work began in 2007 and involved the removal of windows and brick infill walls, restoring the reinforced concrete structural frame through 5,000 in situ works. The deterioration arrived in some parts up to the steel bars of the reinforcement.

The restoration of the structural elements on the facade has therefore provided for several phases: initially, the unstable concrete parts were eliminated by high-pressure water jets; the steel bars were then degreased and treated with anti-corrosion cement polymer. A new layer of concrete, with a specific mixture for the recovery of existing structures, was cast and covered with two layers of anti-carbonation liquid. Finally, a veil of pale ocher color was spread over the entire structure to diminish the striking contrast between the gray of the new punctual interventions with the brownish-gray of the existing material. Filling panels in colored anodized aluminum were then installed, inspired by the tones of the brick infill walls of the original layout. "The starting point was to invert the proportion between the opaque and windowed part - therefore from 2/3 opaque - 1/3 windowed with 2/3 windowed - 1/3 opaque).; with this inversion in the new facades the bedrooms receive much more light from the north" as Greg Moss of Hawkins Brown explains. On the northern front, which presents greater problems in terms of energy, the original proportion was maintained for the bedrooms, providing a brighter solution for the common spaces. The choice of a reduced opening for the sleeping area also works well in the other orientations as it limits solar overheating in the summer season.

The goal, explains David Bickle of Hawkins / brown, was not to embellish one of the greatest brutalist complexes but to preserve it and restore its integrity by ensuring that the redevelopment intervention carried out manifested itself as "resistant, durable, permanent, courageous but above all honest" (Bickle, 2016).



Figure 5 – From the left section of the non-renovated complex; section from the structural cage; section from the redeveloped building with the inversion of opaque / transparent proportions © Hawkins / Brown.

Switzerland

The Cité du Lignon was built between 1963 and 1971 by architects Georges Addor, Dominique Julliard Louis Payot and Jacques Bolliger and it is considered the most spectacular post-war residential construction operation in Switzerland due to its pioneering nature, the originality of the idea of urban system, the innovation of technical and construction choices and its undeniable social value that have made it famous far beyond national borders. The complex extends for 1060 meters and hosts 10,000 inhabitants; consists of two blocks of 26 and 30 floors that in 2009 were included in the plan as structures to be preserved and for which a specific recovery plan was defined.

"However, faced with the new imperatives of reducing energy consumption, a safeguard strategy is needed, a preservation tool capable of balancing cultural aspects of the heritage, economic constraints and energy problems" (Graf & Marino, 2012).

The pilot project of "safeguard and thermal improvement" for the 125,000 square meters of enclosure developed by TSAM, Laboratory of Techniques and Safeguarding of Modern Architecture, sought precisely these objectives: a careful evaluation of the type of work to be carried out in respect of cultural value and economic sustainability. Four options were examined by the research group: the first, which was immediately excluded due to unsustainable costs, provided for the complete replacement of the facades; the other three variants built on a 1:1 scale were tested on site and after two years of testing a compromise solution was reached: the chosen model involved the replacement of the external insulation with an internal insulating layer in synthetic material; replacement of window seals and facade vapor barrier; finally, with respect to the existing glass, a double-glazing unit was added to a single slab and between the two inserted screens with adjustable slats. Through these interventions the energy requirement has been reduced by about 40%.

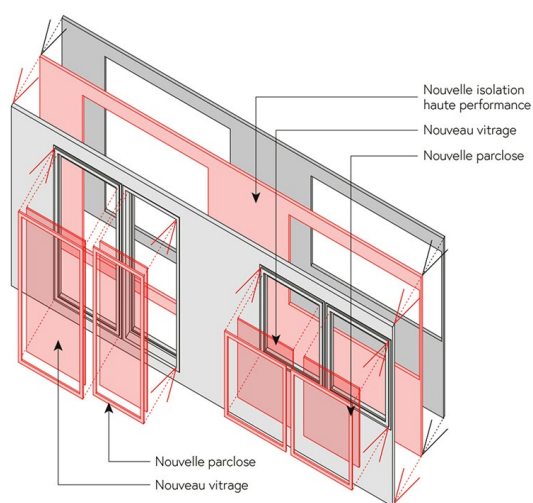


Figure 6 – Exploded view of the vertical closure © TSAM.

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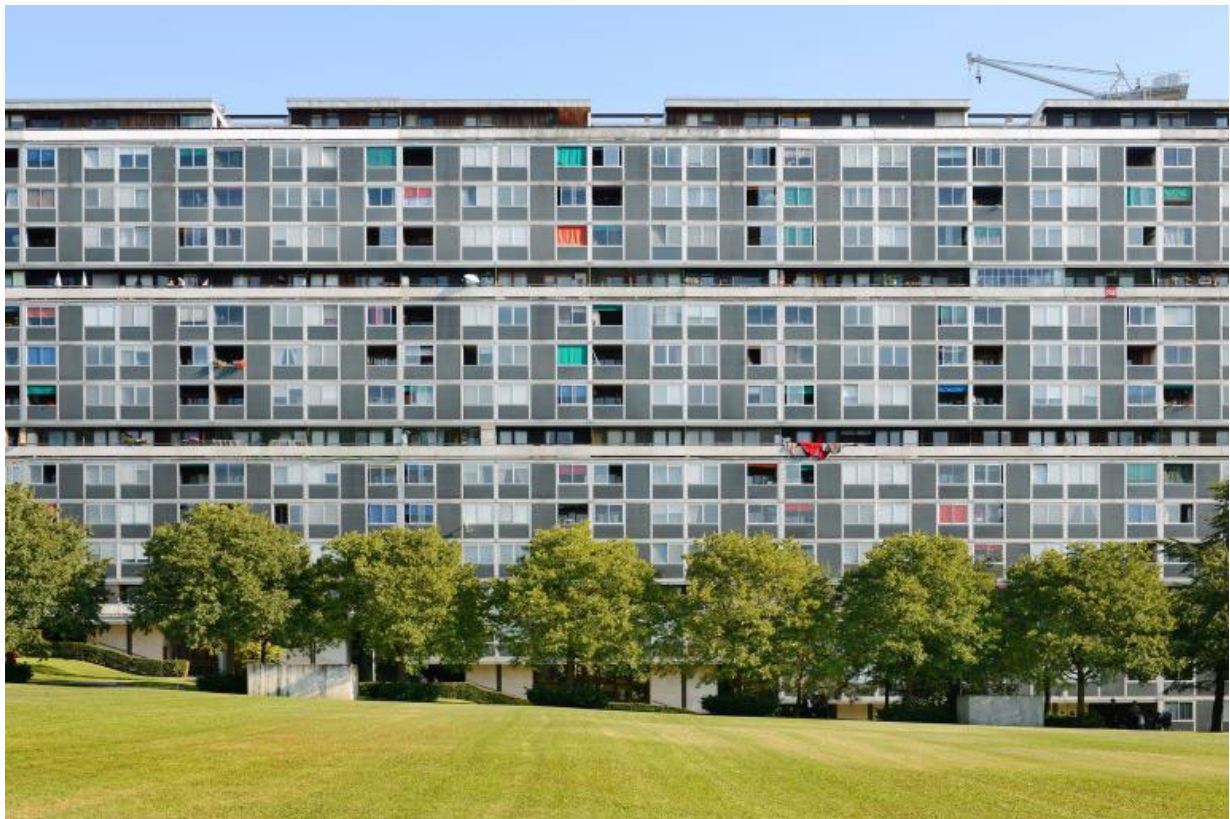


Figure 7 – Facade © TSAM.

France

The Les Bleuets district was founded in 1959 as a response to the emigrant emergency; the project management is entrusted to a construction company and to the ICP that holds a team of professionals for the creation of residential programs in Créteil. The masterplan, which divides the site into two areas, was jointly developed by the Brown-Sarda team, Mikol, Ascher and Paul Bossard.

The architect Paul Bossard had the widest part of the lot, on which he designed a complex of 560 apartments, divided into ten five-story buildings and four hectares of heart-shaped green space connected by pedestrian paths. The buildings were arranged in a fan along a North-South axis to better adapt to the natural slope and the facades oriented along the east-west axis to obtain the best benefit of solar radiation. Aesthetics is close to the brutalist current: the facades were made of precast concrete elements; prefabrication techniques were also used for bands, parapets and planters to which shale and slate slabs are assembled. Inserted in *lecorbuserian* heritage and considered a manifesto of the architecture of brutalist influence and innovative reflection on the quality of architectural social housing at the time, the Les Bleuets district received the label of Heritage Architectural 20th century in 2008.

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The requalification project developed since 2003 by the RVA agency, it is in tune with the spirit of the neighborhood imagined by Paul Bossard.

Starting therefore from the identification of quality criteria - insertion into the urban context, aesthetic dimension, constructive, technical and environmental choices and functionality, habitability and use value of the original project, the so-called Author's declination - the project has also envisaged a demolition work to open the neighborhood to the city and the redevelopment of almost all existing buildings. This evaluation involved a re-elaboration of the open spaces, the redevelopment of the buildings with interventions on the casings for thermal and aesthetic purposes, the innovation of the electric and ventilation networks, the improvement of green and blue infrastructure with a significant improvement in biodiversity.

The ten buildings by Paul Bossard were built based on load-bearing concrete sails covered with prefabricated raw grooved concrete facade panels. Thick concrete bases covered with slate and schist slabs provided the base of the buildings; the floors were underlined by large horizontal bands of the same material. With time, the contrasts between the materials and the original colors decreased, highlighting the uniformity and the gray of the concrete, so that some inhabitants called it "The City of Blockhaus".

The challenge of redevelopment is twofold: to reinforce the identity of the neighborhood and improve its image, to allow it to regain its aesthetic qualities by increasing integration and social ties; intervene on the habitat to solve energy problems.

The work carried out on the casings has been the subject of particular attention and has provided an in-depth study of the brutalist architecture in the Bossard archive. The redevelopment has therefore looked at different aspects: thermal, structural and aesthetic.

One of the first challenges concerned the thermal renovation is the high dispersions produced by facades. The energy performance of buildings has been reduced from class F to class C, through thermal insulation from the inside. Even the windows have been modified with the replacement of wooden fixtures (double glass 4/12/4 with argon - Uw 1,6) that, in addition to guaranteeing better thermal performance, have been chosen in order to return to the wooden frame designed by Paul Bossard and to find a chromatic and material contrast with the raw concrete and the inlaid shale and slate plates. Further work was carried out on heating systems (Heating / DHW: district gas boiler that produces primary hot water sent to the substations for the different buildings; domestic hot water coupling and heat distribution in the radiator housing. Ventilation: VMC single flow hygro B individual), on roofs for treating rainwater, on interior and exterior finishes and on all common areas.

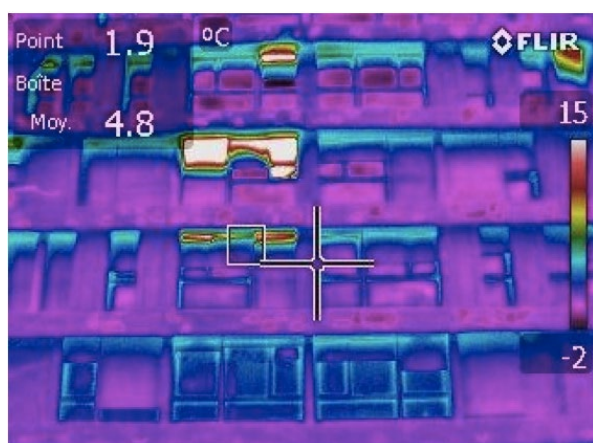


Figure 8 – Thermographic analysis of a non-refurbished Bleuets building © Caue.

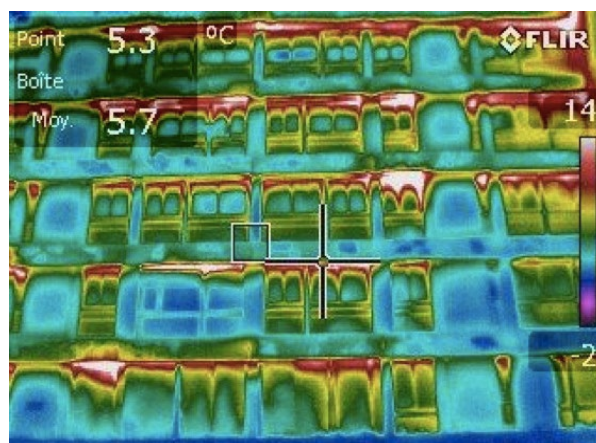


Figure 9 – Thermographic analysis of a refurbished Bleuets building © Caue.

Analysis

The analysis carried out through the new assessment categories, as called for by the Bensberg Charter of 2011, to identify the technological and environmental qualities of the architectures that are usually not studied in depth in cataloging activities and that are fundamental in the preventive analysis activities prior to the design phase. These categories are certainly related to the aspects of the built technological innovation, production technique, seriality aesthetics (Charte de Bensberg, 2011, quoted by Graf & Marino, 2015) but they are also extended to the theme of open spaces understood as the environmental and radiant landscape aspects contextual to the built space; of networks systems aimed at energy saving and waste management; and infrastructures, ie systems of greenery and water which become an integral part of project ideas, often envisaging collaboration, in these types of design elaborations, already in the ideational phase of a landscape architect. This is what the writer means "Integrated" dimension of the project.

Through a comparison carried out on a sample of 13 case studies in 5 countries, (including those mentioned in the paper) the main types of works on the "construction" category of the Author's urban peripheries emerged. They are: removal, demolition, restoration, replacement, conservation and addition; interventions on open spaces concern mitigation, landscapes, space morphology and materials; the interventions on the networks air conditioning, electrical and solid disposal systems are mainly the replacement, demolition and upgrade; the interventions on green infrastructures concern the ecological investigation and different levels of the planting plan; with regard to blue infrastructures, these are operations for the disposal or recovery of rainwater.

1 The Bensberg Charter, outcome of the Conference, urges that conservation tools can also be extended to works from the 1960s and 1980s, in order to avoid loss of heritage and identify appropriate conservation strategies on works whose characteristics make them suitable for development building in a sustainable way.

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A research methodology for the requalification project of the Author's Urban Peripheries emerges, in which the influence between different activities appears essential: bibliographic and archival research, safeguarding and enhancing the buildings and protection of the archives.

Bibliographic and archival research lead in fact to a thorough knowledge of the products and design ideas on which they have been founded and consequently in the results they lead to a more adherent activity of safeguarding and enhancing the buildings and transversally they lead to the memory of the authors and to the protection of the archives of the architects, as tools of the requalification project itself.

The research on the Author's urban peripheries carried out and still in progress has finally highlighted an evident relation between different disciplines of the project (in Italy: icar-09 construction technique; icar-10 technical architecture, icar-11 building production, icar-12 architecture technology, icar-13 industrial design, icar-14 architectural and urban composition, icar-15, landscape architecture, icar-17 drawing, icar-18 history of architecture, icar-19 restoration, icar-21 urban planning). These are therefore the disciplines which are mainly involved in the original project and which should be considered both in the analysis and preparation phase of the requalification project.

Conclusions

Given the assumption that the demolition does not appear to be a valid solution from the environmental, economic and social point of view, the redevelopment of the peripheral districts can be pointed as the only sustainable opportunity for Western society (Paris & Bianchi, 2018). Often also the author's quarters are considered as ordinary and it is important to shed light on the subject since the tangible risk is that of distorting the buildings through compromising interventions and thus losing unrepeatable qualities.

The case studies analyzed show us that it is possible to carry out respectful interventions, where there are specific qualities, but also economically sustainable and energy efficient. The exhaustive knowledge of the object of investigation, of its material identity and of the intrinsic characteristics that distinguish it are the starting conditions for reaching a qualitatively correct project.

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Silvia Nigro, Architect, from 2017 PhD student in Technological Design at Sapienza University (IT). She won the Erasmus scholarship to Riga Technical University in 2012. She got her M.Arch with Honors (Tutor: L. Cupelloni, Co-tutor: U. Bratuskins), a Postgraduate Master's scholarship in "Sustainable Architecture (1^o place) from IN/ARCH and the license in 2013. From 2014 she works for several offices. In 2017 she attended the Advanced Course in Architectural and Urban Requalification and she won the civil service at the Ministry of Culture, working on the National Census of Italian Architecture at DGCC. In 2018 she won a scholarship by Pier Luigi Nervi Project and she worked with Habitech. In 2020 she won a scholarship from Architects board of Rome for the digitalization of Luigi Moretti's private archive. She carries out research activities in the field of technological and environmental requalification of Author's Urban Peripheries.

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