



PhD in CONSERVAZIONE DEI BENI ARCHITETTONICI / PRESERVATION OF THE ARCHITECTURAL HERITAGE - 39th cycle

**PNRR 118 PNRR Research Field: HETERODOXIES FOR THE CONSERVATION AND
UPGRADING OF THE RESIDENTIAL BUILDING OF THE SECOND HALF OF 20TH CENTURY
(1945-1973)**

Monthly net income of PhDscholarship (max 36 months)

€ 1195.5

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

**Motivation and objectives of the research
in this field**

In many countries of the world in the second half of the 20th century, in particular between the end of World War II and the energy crisis, the quantities of buildings erected were greater than ever recorded before in history. The socio-economic dynamics, a lively architectural debate, urban plans and building regulations defined a form of construction in Italian cities that favoured the mid-rise building (between 5 and 15 storeys) in many typological, distributional and constructional variants, interpreted in relation to different types of use. Within the extensive building production, often notable for speculative purposes, a large proportion of the buildings or complexes was designed by architects and engineers of national and in some cases international importance. The research proposed here focuses on private residential buildings built between 1945 to 1973, known to be of considerable interest for their formal, spatial, distributional or structural innovations or the technologies they introduced. These are buildings for collective use, partly residential and partly intended for commercial activities and offices. They are a significant economic resource as well as being a record of a season yet to be explored in many respects. Spatial and structural solutions, distributional devices and technological innovations created a context on which studies and censuses by Ministry of Culture have been



	<p>concentrated for some time aimed at revealing the qualities of many buildings and neighborhoods as well as the role they played in Italian cities, forming an essential part of their identity and an important chapter in the recent history of Italian culture and society in post-war decades. The issue of improving performance is one of the main areas of intervention in existing assets. In the period of construction considered, although the qualities related to livability and comfort, including perceptual values, of the architectural artefacts were not neglected, the achievement of energy performance levels was not a priority, nor was there a widespread awareness of the impact of buildings on the environment. Given the changed relationship between buildings and the environment (energy consumption due to building work, the longer use of buildings, the environmental impact of anthropogenic artefacts, etc.), it is now necessary to consider energy efficiency projects as essential factors in their upgrading. The goal of the research is to promote the conservation, enhancement and improved use of a broad and significant heritage, contributing to environmental sustainability and the well-being of inhabitants by defining a methodological and operative approach capable of providing operative instructions for good practices, i.e. choices of non-invasive, appropriate, and effective intervention to offer improved performance, yet respectful of the identity of the places and the architectural and material characteristics of buildings.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research intends to adopt a interdisciplinary approach to reinterpret the theme of the critical issues of private residential buildings, avoiding considering them separately from the various aspects of the aging of materials, structural safety, accessibility, performance levels and energy efficiency, on the basis of a deep knowledge of their architectural, spatial, distributional and material characteristics. The methods to be applied will involve supplementing experiments conducted in the various disciplinary fields involved in the research: historical-documentary knowledge, integrated survey, information modelling, technical and technological analysis of building components, etc. Deficiencies in</p>



	<p>performance are often associated with signs of deterioration in structural components and related materials, factors now addressed partly by work carried out with high-performance innovative materials and technologies, but which ignore the needs and purposes of conservation. Of primary importance is the reliability of the tools for analysing and assessing the real capacity and features of these buildings.</p> <p>The identification and networking of virtuous practices of maintenance, static and seismic safety, accessibility and energy improvement, conducted nationally and internationally (Ecole Nationale Supérieure d'Architecture de Paris La Villette), will be accompanied by projects on case studies on which the interdisciplinary skills of the different research units will converge and serve as examples and support to designers, companies and organisations required to define, design and create works to upgrading the residential buildings of the second half of the 20th century. The research will be developed in connection with Comune di Trento.</p> <p>The result will be a new methodological and operational approach to good practices including preliminary knowledge of significant buildings and related spaces, ways to identify frailties relating to accessibility, safety and energy dispersion; intervention techniques and maintenance procedures; advice for designing interventions, innovative solutions oriented to broader accessibility; indications for the design of improvements to ensure reduction of seismic risk, which innovative techniques for the design and execution of works for energy improvement.</p>
Educational objectives	<p>The goal of the research is to promote the conservation, enhancement and improved use of a broad and significant heritage, contributing to environmental sustainability and the well-being of inhabitants by defining a methodological and operative approach capable of providing operative instructions for good practices, i.e. choices of non-invasive, appropriate, and effective intervention to offer improved performance, yet respectful of the identity of the places and the architectural and material characteristics of buildings.</p>



	<p>The research will advance of knowledge precisely because of its inter/multidisciplinary character and aim of systematizing studies conducted in different and sometimes distant perspectives, selecting virtuous practices and then proposing an innovative method capable of combining cultural, regulatory and technical issues. Looking at the residential buildings erected in the boom years in the light of the interconnected contributions of the history of architecture, conservation, technology, civil engineering, materials engineering and representation will advance our knowledge of the architectural project, the building site, the lives of individual buildings and their effective duration, conditions of fragility, prospects and methods of improvement and durability. This will lead to a significant reinterpretation of a heritage that has scarcely been investigated. A new awareness on the part of operators in the sector will be led to a specific approach that can easily be embodied in the various cases. The elaboration of the new strategies will advance knowledge in the service of the various actors in the processes that take as their object the built heritage (architects, engineers, contractors, clients, public institutions).</p> <p>The PhD programme, lasting three years, calls for the acquisition of minimum 25 credits divided as follow: 15 credits (minimum) offered by PhD courses organized by the PhD programme in Preservation of the Architectural Heritage; 10 credits offered by the PhD School (transferable and soft skills). Periodical milestones (every six months approximately), starting from the first year, will verify Ph.D. students' progress in individual research.</p>
Job opportunities	<p>Graduates of the PhD programme have often found employment in public sector and conservation institutions, as well as in professional practices and in the business world, in specific specialized fields. PhD candidates from abroad find job in their native countries at University or in Cultural Heritage Institutions. As regards Italy, the relationship with Italian Ministry of Cultural, has been definitely fruitful.</p>



Composition of the research group	11 Full Professors 13 Associated Professors 0 Assistant Professors 48 PhD Students
Name of the research directors	prof.ssa Francesca Albani

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	597.76 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Not necessary
By number of months at the company	0
Institution or company where the candidate will spend the period abroad (name and brief description)	Ecole Nationale Supérieure d'Architecture de Paris La Villette (Paris, France)
By number of months abroad	6



Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

See the educational program and rules of the PhD Course in Preservation of Architectural Heritage.

Other fund for Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year ("DOTE"):

1st year: max 1.624,30 euro

2nd year: max 1.624,30 euro

3rd year: max 1.624,30 euro

Teaching assistantship (availability of funding in recognition of supporting teaching activities by the PhD student)

There are various forms of financial aid supporting the teaching practice.

The PhD candidate is encouraged to take part in these activities, within the limits allowed by the regulations.