

# Architecture *on* the Modern. Methods and design actions for the school heritage within seismic Italy.

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## Extended abstract of the research

The research I am developing concerns the **adaptation and preservation of the Modern architectural heritage** in Italy. In particular, it focuses on the **school heritage**, built between 1950-1970, with **reinforced concrete frame structures** and located in **high vulnerable seismic areas**.

The leading aim will be the intervention, through a methodology based on *architectural design actions*, that can guide and interpret the buildings' seismic adaptation from the point of view of spatial modifications.

## A general overview on the theme

### • *The Modern: the “Masters” and the “minors”*

The choice of this field of investigation comes from the awareness about the *risk factors* and intrinsic *fragilities* owned by Modern heritage.

The buildings of this period, built from the early twentieth century in Italy, show constructive techniques, materials and innovative solutions that have determined their success and fortune. This is especially evident referring to the buildings designed by the so-called *Masters of the Modern* whose fortune, in the architectural panorama of that time and in today's one, derives precisely from their ability to introduce innovative typological and spatial solutions still valid today. Alongside the Masters, however, many architects, which we can call “*minors*”, arose their activity. They are less known in the vast panorama because their works were often developed in regional contexts or fewer buildings, so significantly reduced literature on them is available.

The decision this research sets itself is to take an interest in buildings, precisely among the school heritage, designed by the so-called “*minor*” architects.

A selection made upon consideration in several aspects. First of all, a broad discussion on the issue of the legitimacy of interventions to be applied to the buildings designed by the Masters, is already open. Those ones, if suffer, from one side, from an almost absent regulatory protection, just think about the inefficiency of the copyright law (L. 663/1941) or the possibility of applying monumental restrictions only after 70 years from the construction of the building (D.L. 70/2011), are architectures undoubtedly recognized for possessing values that need to be preserved and protected over time. For that heritage, the uncertainty consists of identifying valid and common *modus operandi* for acting on basically new materials, on which a well defined and shared prevention technique is not developed yet.

Although, therefore, the architectural heritage of the Masters, which presents an undoubted value, is already at the center of a debate about the most appropriate actions and interventions to be adopted on them, a gap is found in the context of those “*minor*” buildings that must be adapted mainly because of the strategic role they fulfill.

### • *Time frame*

The settlement of the period between 1950 and 1970 is linked to several considerations.

First of all, the years after the Second World War have seen a mature consciousness about the necessity to set up buildings that fulfill specific functions rather than, as in past years, the

adaptation of those designed in earlier eras for different uses. The awareness the school building should satisfy specific purposes and that its spaces' characterizations could influence the students' level of learning begins to be affirmed in this period. In fact, in 1952, *Centro Studi per l'Edilizia Scolastica* was established by the Italian Ministry of Public Education to conduct studies on the new essential characteristics of schools in the modern era.

Furthermore, it is essential to consider the most recent data presented by the *Anagrafe* of the Italian Ministry of Education, according to which more than half of the actual school buildings in our Country were built before 1970.

- *Risk factors*

Referring to these buildings' structural consistency, most schools of this period were realized with a **RC frame structure**. The concrete is a material that is much more and in less time exposed to obsolescence, thus undermining the structural safety of the buildings. Another critical aspect is linked to the **high seismic exposition of our Country**. After the Friuli and Irpinia earthquakes, a revision of the possible effects of the seismic event on the Country was required. However, only the promulgation of the NCT2008 was able to increase the sensibility about the seismic alert level, classifying the entire territory into four seismic zones in which apply specific preventive actions.

- *The issue today*

Nowadays, the necessity to work on the school heritage with seismic preventive actions is widely shared also by the experiences carried out by the department “Casa Italia”<sup>1</sup> and by the Ministry of Education, both financing, especially after the recent central Italy earthquakes, a series of interventions aiming to a broad knowledge about the interested heritage consistency and to intervene quickly and programmatically in these contexts.

However, the urgent matter outlined is related to the most appropriate methodologies of intervention on these typologies of buildings and contexts. In fact, most of the time, intervention motivated by the emergency and rapidity make prevail solutions that tend to undervalue the **implications** on the **architectural space**. These are the cases in which the use of structural systems that adopt anchors, tie rods and props insert themselves with “force” into the architectural space, forever changing its perception and habitability.

### **The aims and the importance of the research**

Therefore, we must ask ourselves about the role the architectural design has, or may have, in this context. In fact, the research aims to **redefine the role of architectural practice** in the adaptation and prevention of Modern heritage, using the **architectural project, applied to case studies, to develop simulations and prototypes of intervention**.

This can happen starting from the recognition of schools' most relevant “*fragilities*” in the structural elements, trying to categorize them in a sort of *abacus* to identify problems and possible strategical design solutions; working in contrast with the widespread Italian emergency practices and rapid interventions that often change the architectural object irreparably and undermine its liveability; trying to find solutions that can improve the use of the school buildings all over the day and that can also revitalize the urban and social context in which they are located, improving connections with close public open spaces that can work with the adapted building in a wider system; taking advantage from the already experimented methodology and research works developed by international research laboratories (i.e. MIT Urban Risk Lab), trying to pair the resolution of architectural and structural issues with the social and hazard prevention ones.

The use of specific tools like *Carta del Rischio* developed by the ISCR, the data provided by the Ministry of Architectural and Cultural Heritage or Ministry of Education and “*Casa Italia*”, helped in the selection of case studies (among them: Primary school “*A. Pecorini*” in Gorizia

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<sup>1</sup> After the 2016 earthquake in the Centre of Italy, the “*Casa Italia*” department was established by the Italian Government to promote natural hazard risks prevention for the built heritage. It is recently financing studies and works on the school heritage, being aware of the obsolescence to which it is exposed.

by Roberto Costa, 1956-59; “E. Mannucci” Art Institute in Ancona by Paola Salmoni, 1962-67; “P. Maroncelli” Secondary School in Forlì by Luigi Pellegrin and Ciro Cicconcelli, 1963-70). The three case studies, selected as a paradigm of the typological innovation of their time and also, according to dimensional and typological criteria as representative of the extensive series of Italian school buildings, will act as a testbed to develop *guidelines* of essential and possible intervention to adopt on the buildings and their context as a decisive element of action and modification on the Modern architectural heritage, and the improvement of safety living conditions.

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## Design Driven Research

The work developed can be defined as a *design-driven research* because the design is an essential tool, a way of thinking, understanding and improving its results.

The research is structured following subsequent steps in which design and drawings are used to solve questions and clarify the next phase.

After the theoretical and critical context settlement, the analysis of the widespread innovative school typologies of 1950-70 started. This step consisted of comparing plans, sections, structural and distribution schemes, making notes, diagrams, and sketches to understand the valuable elements (all collected and classified into summary reports) to be found in case studies selected as a testbed. After selecting case studies, it was necessary to study the original drawings and analyze their structural and compositional elements' *fragilities and potentialities*. Re-drawing plans, sections and elevations were the way to find design rules and guidelines for the third phase. In this last stage, the experimentation on case studies, the design tool will be used to suggest solutions of intervention on the heritage to prevent it from the seismic loss and revitalize the architectural object. Plans, sections, collages will be used to set up new configurations of the buildings. This way will permit categorizing similar typologies of weakness in the school building's broad panorama and abstracting a methodology of design actions that can be adopted in similar contexts and heritage.

Keywords: school, Modern heritage, architectural design

## Biography - Greta Maria Taronna

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Stage of research: end of 2<sup>nd</sup> year (XXXIV Ph.D.edition)

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Architect and Ph.D. candidate, Greta graduated, both *cum laude*, in “Architectural Sciences” at “La Sapienza” University of Rome (2012) and in Architecture at Politecnico di Milano (2015).

She worked with Cino Zucchi Architetti, Gonçalo Byrne Arquitectos, DFA, and she is registered in the Order of Architects PPC of Milan.

From 2015 she is a teaching assistant in the bachelor and master design studios of the AUIC school in Politecnico di Milano.

Her research, part of the Excellence Department program, focuses on preventing the Modern school heritage (1950-70), designed by “*minor*” architects, from the seismic loss using the design tool also to strengthen its architectural value.



**Re-think, Re-draw, Re-form.** Suggestion for the “*A. Pecorini*” school in Gorizia - *collage*  
In the background, a picture of the school “*A. Pecorini*” built in 1956-59, in: Aloï, Giampiero. 1960. *Scuole*. Milano: Hoepli Editore.