

AEROSPACE ENGINEERING / ARCHITECTURAL,  
URBAN AND INTERIOR DESIGN /  
ARCHITECTURE, BUILT ENVIRONMENT  
AND CONSTRUCTION ENGINEERING /  
BIOENGINEERING / DATA ANALYTICS  
AND DECISION SCIENCES / DESIGN  
/ ELECTRICAL ENGINEERING / ENERGY AND  
NUCLEAR SCIENCE AND TECHNOLOGY /  
ENVIRONMENTAL AND INFRASTRUCTURE  
ENGINEERING / INDUSTRIAL CHEMISTRY AND  
CHEMICAL ENGINEERING / INFORMATION  
TECHNOLOGY / MANAGEMENT ENGINEERING  
/ MATERIALS ENGINEERING / MATHEMATICAL  
MODELS AND METHODS IN ENGINEERING  
/ MECHANICAL ENGINEERING / PHYSICS /  
**PRESERVATION OF THE ARCHITECTURAL  
HERITAGE** / STRUCTURAL, SEISMIC  
AND GEOTECHNICAL ENGINEERING /  
URBAN PLANNING, DESIGN AND POLICY



Chair:  
Prof.  
**Mariacristina Giambruno**

## DOCTORAL PROGRAM PRESERVATION OF THE ARCHITECTURAL HERITAGE

The Doctorate Course in “Preservation of the Architectural Heritage” was first held at Milan-based Politecnico back in 1983. The PhD program focuses its attention to some currently crucial themes for the preservation, conservation, management and valorization of Architectural Heritage.

Starting from the fundamental topics of knowledge, preservation, design and intervention, the PhD program takes care of the most important and urgent problems affecting the built Heritage and Cultural Landscapes: the fragility and the abandonment of historic marginal areas; the climate change and its effects on the built environment; the improper pressure of mass tourism on our historic settlements and sites of cultural interest, the needs for a wider social involvement in the field also through appropriate ICT mediums, the management and the use of architectural Heritage.

The conservation of Architectural Heritage is, in fact, a strategic field as well as one of the main important resources for worldwide economy and for a sustainable future in different areas of the world.

The team of professors, promoting and participating in the debate about these matters on a national and international scale, will thus deal with a broad range of issues requiring strong and real multi-disciplinary approach.

In addition to the professors of architectural restoration, history of architecture and structural strengthening of the Politecnico di Milano, the Faculty Board includes representatives from other well-known universities and research institutes (Università IUAV, Venezia; Università di Genova; Politecnico di Torino, Università degli Studi di Bergamo; CNR-ISPC); they collaborate actively in the teaching and research activities.

The ultimate purpose of the Faculty Board not only resides in broadening the experiences that the PhD candidates acquire over the first three years of the course, where they have the opportunity to interact with scholars from different backgrounds; it chiefly aims at providing the PhD candidates with a unique training experience in the Italian panorama, so far unparalleled also in domains other than the preservation and restoration of the cultural heritage. Such context investigates the synergies and responses to the modern themes of cultural heritage protection.

The PhD programme is meant as the place where theorization, methodology, investigation into the most significant chapters of the protection of historic architectural and cultural heritage are connected to complex, challenging operating research themes, on-site and lab experimentation of analytical and diagnostic stages.

The relationship with Italian Ministero per i beni e le attività culturali e il turismo - Mibact (now MIC) has been definitely fruitful, especially when we consider that many among the best PhDs in Preservation of Architectural Heritage have been hired as officers and executives to the above ministry; recently (February 2018) twelve PhD from the PAH Programme won the competitive exam to become officers in the Ministry of Cultural Heritage

### Teaching aims

The Faculty Board organization allows to investigate and share extremely relevant, up-to-date topics that, architectural heritage being the high spot of research, describe the complex domain of preservation, a strategic field and, at the same time, one of the chief resources of the Italian economy and future.

Being a mix of differentiated research, experimentation and operating methods, the PhD programme provides the candidate with a rich and very interesting experience. The on-going contact with the breakthroughs from studies and research carried out in Italian and international contexts and the will to promote joint projects are fostered through expanding the network of relations the university entertain with other universities and research centres in different geographic areas of the world.

In this regard, over the past 5 years the PhD programme in Preservation of the Architectural Heritage has been committed to promoting and coordinating inter-doctoral courses contributed by foreign professors from different European countries.

### Coursework

The PhD Programmes and the PhD School activate teaching forms of different kind and credit value, including courses, seminars, project workshops, laboratories. Teaching activities both cover the basic research issues (problems, theories, methods), which represent the founding element of the PhD programme and clearly identify its cultural position, and deepening in a specialist way some research issues connected with the problems developed in the theses.

Within this plan, different experiences are organized in order to get PhD candidates in touch with study and research developed in Italian and International context. Visits to important restoration site are organized, such as the ones to the area in the central part of Italy damaged by the earthquakes (Amatrice Accumoli, etc.); to the Procuratie, Rialto Bridge and the Palazzo Vendramin Calergi in Venice; to the Colosseo in Rome under intervention of maintenance (with ISCR, formerly Istituto Centrale del Restauro), to the Sanctuary of Vicoforte (in collaboration with Politecnico di Torino); to the underwater archaeological site in Baia (Napoli) in relation to the ISCR project “Restoring Unerwater”. Two workshops organized as interdoctoral program in Sulmona and in Nicosia (Cyprus) allowed students to gain experience in national and international contexts with highly topical issues.

The second and the third years are aimed at personal study and research for the PhD thesis.

The activities undertaken during the second and third year also include attendance of workshops, seminars, international meetings related to individual research, with great attention to conferences wherein PhD candidates present the results, even partial, of their research theses.

### Research organization and topics

Educational activities are related to research either under way or at an early stage of development, some of which addresses major monumental structures and some of the most renowned sites of the world. This aspect increases the technical characteristics and will make PhD immediately competitive at the European level.

To the aim of their thesis research, PhD candidates have the opportunity to rely on facilities and laboratories, both inside and outside the University, the breadth and width of which provides them with a crucial support to the aim of acquiring “competence for highly qualified research activities” in the domain of cultural heritage protection.

In this connection, the PhD programme deems to carry on the long - standing collaboration with the CNR-ISPC. As for the thesis research, candidates thus have the opportunity to address and investigate in-depth the wide-ranging themes connected to heritage knowledge and preservation broadly meant, such as advanced methods of investigation.

The multi-disciplinary nature of the doctoral courses, encouraged in the framework of the PhD programme since its establishment, equally values the fundamental contribution of historical research and its methods; at the same time it features innovative, pioneering themes: impacts of climate change on architectural heritage and cultural landscapes; Inner Areas: census, conservation and re-use of Architectural Heritage; strategic approaches for the preservation; social involvement and Communities engagement in the protection and management of their Heritage; Impact of mass tourism on architectural heritage and cultural landscapes; cultural and sustainable tourism policies and practices; Architectural Heritage at risk in seismic or in conflict areas; Architectural Heritage and Cultural Landscapes in Countries in transition; Cultural Heritage and Economic Evaluation.

## DOCTORAL PROGRAM BOARD

The Board of Professors comprises the following members:

Mariacristina GIAMBRUNO (Coordinator), Full Professor – Architectural Conservation (Politecnico di Milano)

Claudio CHESI (Vice coordinator), Full Professor – Structural mechanics (Politecnico di Milano)

Paolo FACCIO, Associate Professor – Strengthening and Rehabilitation of Historic Buildings (University IUAV, Venezia)

Giovanna FRANCO, Full Professor – Renovation technologies, Head of the Specialization School for Architectural Heritage and Landscape (University of Genoa)

Giulio MIRABELLA ROBERTI, Full Professor – Strengthening and Rehabilitation of Historical Buildings (University of Bergamo)

Stefano MUSSO, Full Professor – Architectural Conservation – President of SIRA (Italian Society of Architectural Restoration), University of Genoa)

Alessandra OPPIO, Full Professor – Real Estate Appraisal (Politecnico di Milano)

Annunziata Maria OTERI, Full Professor – Architectural Conservation (Politecnico di Milano)

Marco Andrea PISANI, Full professor – Structural engineering (Politecnico di Milano)

Francesca ALBANI, Associate Professor – Architectural Conservation (Politecnico di Milano)

Massimo BOCCIARELLI, Associate professor – Structural mechanics (Politecnico di Milano)

Alberta CAZZANI, Associate Professor – Architectural Conservation (Politecnico di Milano)

Davide DEL CURTO, Associate Professor – Architectural Conservation (Politecnico di Milano)

Marica FORNI, Associate Professor – History of Architecture (Politecnico di Milano)

Andrea PANE, Associate Professor – Architectural Conservation (Politecnico di Milano)

Serena PESENTI, Associate Professor – Architectural Conservation (Politecnico di Milano)

Gianfranco PERTOT, Associate Professor – Architectural Conservation (Politecnico di Milano)

Cristina TEDESCHI, Associate Professor, Referring Professor of the Material test Laboratory – section “Historic Buildings Materials – Diagnostic, monitoring and investigation on materials for historical buildings end cultural heritage” (Politecnico di Milano)

Antonella E. SAISI, Associate Professor – Diagnostics of Historic Buildings (Politecnico di Milano)

Ferdinando ZANZOTTERA, Associate Professor – History of Architecture (Politecnico di Milano)

**Non-academic members:**

Carolina DI BIASE (past coordinator)

Barbara DAVIDDE, Senior superintended “Soprintendenza nazionale per il patrimonio culturale subacqueo”

Marco REALINI, Lead Researcher ICVBC-CNR

Antonio SANSONETTI, Lead Researcher ICVBC-CNR

## ADVISORY BOARD

Roberto CAMAGNI, Professor Emeritus (Urban Economy, Politecnico di Milano)

Carla DI FRANCESCO, Director Scuola dei beni e delle attività culturali

Javier GALLEG0, Full professor, Restauración Arquitectónica, ETSA, Universidad de Granada (Spain)

Marie Laure LAVENIR, General Director, ICOMOS International Secretariat

Antonella RANALDI, Superintendent ‘Archeologia, Belle arti e paesaggio per la città metropolitana di Milano

Cristina SABBIONI, Past director Istituto di Scienze dell’Atmosfera e del Clima (ISAC-CNR);

Eugenio VASSALLO, Past professor IUAV Icar 19

## THE CITY AND THE RIVER. THE RIVERBANKS OF MUSEUMS IN PISA FROM THE NINETEENTH CENTURY TO TODAY

Francesca Giusti – Supervisor: Prof. Susanna Caccia Gherardini – Co-Supervisor: Prof. Carolina di Biase

The study of the museums that have attested in sequence on the riverbanks in Pisa (Lungarni) stems from a need to further explore the historical and cultural reasons that have determined this specific urban vocation, with the aim to gather knowledge of individual realities bringing them back to a system, along a single thread and over a long period of time. A set of pluralities, which goes beyond the value of the single building, placing new parameters of efficiency and cultural quality. Where the Arno represents the memory of the “glorious” historical genesis of the Republic of Pisa that originates from the sea, the port and the river connection. Therefore, it is the historical uniqueness of this weaving that creates the premises for a real “system”, rooted in the nineteenth-century construction of urban identity and that starts at a time when problems posed by secularization of ecclesiastic properties in the post-unification period and by reconstruction after WWII generate profound functional transformations, induced by an increase in the availability of buildings for the use of the community, lined up along the banks of the city of the river Arno (suppressed convents, demilitarized defense structures, palaces owned by the Crown of Italy). Entering into the complexity of such a system implies a long examination of an urban event that defines the identity values of the Lungarni during the nineteenth century, the crucial period of their aesthetic and structural transformation that connects the dynamics of the river, its turbulence and hydraulic works, with urban and

architectural solutions. Consequently, a central node of this process is the relationship between the formation of the Lungarni’s historical identity and the bearing of witness to a recognized cultural vocation. The myth of Pisa’s importance during the Middle Ages, the romantic dimension of its river landscape, the monuments and discoveries unveiled from the successive layers of the walls, the protection of artworks coming from the suppression of religious buildings and their collections; the cataloguing and exhibition in the first Civic Museum, the caesura of war that catalyzes a critical dimension of restoration as a fundamental opportunity for knowledge, until the emergence of an innovative museum concept, linked to museography and historical-critical training: these are the themes that guide the common thread of research. Hence the need for an integrated understanding of the stages of this process. Moving in this direction, the research was articulated along three fundamental elements, integrated between them and subdivided into five parts. The first, which includes the two initial chapters, concerns the construction of the cultural identity of the Lungarni in the context of romantic nationalism and the protection of the “national cultural heritage”. More precisely, the study focused on how to perceive the riversides of Pisa in relation to the context of the city, through the narration of the Guides, the poetic and iconographic testimonies. From here, the significance that these assume in the culture of the Grand Tour as alter ego of the religious and

monumental heart of the city, theater of the town’s festivals, its social gatherings, the residences of the city and the foreign elite, therefore as a privileged axis of culture and artistic activity. On this historical basis, the analysis focuses, in its core, on the theme of reconstruction after the Second World War, to which recent historiography has dedicated critical voices, fundamental to frame the case of Pisa in the context of a national debate. The reconstruction phase is the catalyst for new functions for city institutions and culture in the Lungarni buildings. The possibility of using monumental buildings owing to, as has been said before, the particular financial situation evident during the nineteenth century, and the availability of free areas as a result of the changed conditions caused by war damage, offers new opportunities for a reorganization of urban functions and, in particular, a first urgent response to the necessity to safeguard historical artistic heritage salvaged from the war and distributed in various locations. In this context, the San Matteo Museum, which represents a starting point for a museum system along Pisa’s riverbanks, plays a central role not only in the city, but in the context of the international debate during the years between the two World Wars, in which all aspects of modern museography are examined, and that Sanpaolesi transfers into an exemplary project synthesis. In the light of this cultural and institutional framework, we can better understand the reasons that led Sanpaolesi to transfer the old museum of San Francesco headquarters to the former convent of San Matteo on the Lungarno Mediceo,

including the urban “greater centrality” and the availability of spaces; aspects that allowed implementation of a new museum model, linked to the teaching of history of the arts and the restoration process of the works themselves. The final part of the research is therefore focused on this particular model and on the museums that develop along the Arno from the last twenty years of the twentieth century to today. Among these, the Palazzo Reale, which became the seat of the new Pisan Superintendence and Museum of the Medici-Lorena-Savoia collections with other former bequests in part from the Civic Museum, and Palazzo Lanfranchi, now the Museum of Graphics. We can assume that the theme of the continuity of museums along the Arno, has been sanctioned by the intervention in the vast area of the Republican and Medici Arsenals, laying the foundations for a concrete realization of the “system”. This allows us to verify in the present time, from the end of WWII onwards, what the reconstruction of this part of the city meant, in terms of cultural opportunities. It also allows strengthening a specialized axis of artistic and historical culture that configures the Lungarni as a potential “museum system” from the imprimatur of the Museum of San Matteo, to the consolidation as museum destinations of the Lanfranchi and Reale palaces from the 70s to the early 90s, then again in the new millennium, with “Palazzo Blu” and the Arsenali area. The Cittadella Nuova with the Sangallo fortress and the Scotto garden on the south side and the Cittadella Vecchia with

the Republican and Medici Arsenals and the Galilei park on the shore of Tramontana, constitute the extreme points of the city’s Lungarni and the boundaries of the potential system. Today, in the perspective of museum use, these two areas, with a strong landscape value, can be configured as the extreme points of the prefigured system, reconnecting the river in an integration of nature and culture. In particular, the area of the Arsenali, can become one of the entrances to the riverbanks of museums, leading to the Museum of San Matteo at the opposite end of the same axis. Revisiting the thread of history from the 19th century to the present, the concept of a “system” takes shape, as a set of several museums, united by the connection with the territory that contains them, represented by the Arno crossing the city and its history. The aim of the project “system” is to increase conservation, transmission and cultural enhancement of the heritage of each individual museum, placing it in a dynamic consequentiality and making the same system an integral part of the landscape of Pisa. It is therefore a driving force for new balances between large and small collections, between permanent collections and temporary exhibitions, between the museum, institutions and the city.

## POLITICS AND PROTECTION PRACTICES IN ISTRIA IN THE “SHORT TWENTIETH CENTURY”: THE CASE OF POLA/PULA.

Sara Rocco – Supervisor: Prof. Gianfranco Pertot – Co-Supervisor: Prof. Marko Špikić (University of Zagreb)

The PhD thesis aimed to investigate how the protection of monuments has developed in connection with politics and ideology in the old city of Pula in the “short twentieth century”.

This city, situated in a border region, represents a particularly peculiar case in point due to the historical events which occurred in a quite short period of time, namely the last century. Four different administrations, split by three wars, succeeded one another: the Austrian Empire (1814–1918), the Reign of Italy (1918–1947), the Republic of Yugoslavia (1947–1991) and the Republic of Croatia (since 1991). This succession of political governments constituted “the red thread” of the research which aimed at studying different ideas of heritage and tendencies in restoration. Every chapter of the thesis has been dedicated to a different temporal period which corresponds to a political administration. The order of narration is chronological, in order to ease the comprehension and interpretation of the historical transitions, the political swappings, the evolution of the city and the interventions implemented to the monuments. The last chapter is dedicated to the present, in order to recognise legacies and links with the past.

The research, which is dedicated to a very long and complex period, was intended to be the first study to overcome a number of linguistic, cultural and ideological limits, that had prevented this kind of studies so far, focusing on the consequences on architectural heritage.

The research has been conducted through a critical analysis of the theoretical, legal and technical approaches to the protection of heritage (that at different times has assumed the role of an ideal legacy to relate with, of an enemy that has to be destroyed or of a document to be preserved) that could be considered as a fruitful way to study and highlight the ideological features, intentions and purposes of the different rulers. In order to define these visions, several sources have been taken into account: regulations and legislations of the protection of heritage and monuments; technical aspects have been analysed through the examination of a wide number of archival documents about restoration, preservation and valorization composed by drawings, project reports and correspondence between the Ministry, the Municipality and the architects in charge; direct observation of monuments in order to recognize the previous interventions; theoretical writings of architects; bibliographies. Furthermore the analysis of exhibitions and conferences organized to share and spread the knowledge acquired, of travel diaries and guides allowed the acquisition of further information and helped build a more complete dissertation. Lastly, the toponymic changes of the city of Pula, repeated at every change of administration represented an important act of appropriation. The research was intended to reconstruct an history of heritage and of monuments with a broad view, primarily focusing on the activity of

the institutions of protection, in a strict relationship with ideological and political aspects, without overlooking cultural, economic and social contexts, which sometimes played an even bigger role.

The research highlighted that every political administration has been characterised by a strong connection between politics and protection practices and that each one differentiated itself for their own peculiar features.

Additionally some elements of sharing and continuity in the relationship between politics and protection practices have been recognized. Every ruler showed a declared dislike towards their predecessors; despite



**Fig. 1**  
Allied bombing on the city of Pula, 8th June 1944



**Fig. 2**  
The study group composed by Yugoslav conservators to monuments is visiting the city of Pula, October 1947.

this attitude, each one of them often continued to work on the same monuments and at times carried on the restoration works started by someone else. Furthermore, one of the first acts of appropriation of the rulers was the modification of the toponymies of the city in order to adapt them to the new politics and culture. Even though, since the Austrian administration the number and typologies of monumental goods subjected to protection have been progressively increased, Roman architecture has always stayed at the center of attention in order to attest to the most significant period of the city, albeit having changed its role due to the awarding of different values over the course of the century. Moreover, each period was



**Fig. 3**  
Anti-aircraft protection of the Temple of Augustus and of the Town Hall, November 1991

characterized by the presence of some main characters who strongly influenced decisions, modalities, course of actions and techniques of restoration on monuments; they were different in origin, formation and ideology. Nevertheless, even if the city was situated in a peripheral area, the adopted restoration practices generally respected what was happening elsewhere and showed a strong connection and a coherence with the international evolution of the discipline.



