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PhD Yearbook | 2026

DOCTORAL PROGRAMME IN PRESERVATION OF THE ARCHITECTURAL HERITAGE

Chair:
Prof. Francesca Albani

The Doctorate Course in "Preservation of Architectural Heritage" (now called "Built Heritage Conservation") was first held at Milan-based Politecnico back in 1983.
The PhD programme 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 programme takes care of the most important and urgent problems affecting the Built Heritage and Cultural Landscapes: the fragility of 20th century architecture; 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 Built 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; Università degli Studi di Bergamo; ISPC-CNR, ISAC-CNR); 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 programmeme 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 della Cultura (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.

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 programmeme 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 programmeme 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 Programmemes and the PhD School activate teaching forms of different kind and credit value, including courses, seminars, project workshops. Teaching activities both cover the basic research issues (problems, theories, methods), which represent the founding element of the PhD programmeme 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". Workshops organized as interdoctoral programme in Sulmona (Italy), in Nicosia (Cyprus), Elbasan (Albania) and Cuba or joint workshops with international university as in Belo Horizonte (Brasil) 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 programmeme deems to carry on the long - standing collaboration with the ISPC CNR (the Institute for the Preservation and Enhancement of Cultural Heritage) and new collaboration with ISAC-CNR regarding climate change and Heritage.
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 programmeme since its establishment, equally values the fundamental contribution of historical research and its methods; at the same time it features innovative, pioneering themes: problems of conservation and reuse of 20th century architecture; 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.

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THE URBAN SCALE OF HERITAGE IN SOCIALIST HUNGARY.
PRESERVATION AND PLANNING POLITICS THROUGH THE CASE OF EGER (1949-1989)

Franz Bittenbinder - Supervisor: Mariacristina Giambruno, Oana Cristina Ţiganea

This research elaborates on the nexus between preservation and urban planning in Hungary between the consolidation of state socialism in 1949 and the fall of the Iron Curtain in 1989. It proposes a critical reassessment of the work of monument protection agencies, bearing in mind two historic moments inducing decisive paradigm shifts, the Hungarian Revolution of 1956 and the New Economic Mechanism of 1968. In the context of different stages of urban conservation, the pre-revolution period is theorised as the time of emergence, while the post-revolution period is established as that of implementation via the codified concept of 'areas of heritage significance'. Shaped by extensive modernisation programmes, the years after 1968 can be linked to unfolding projects that were increasingly informed by decentralisation efforts. The given work argues that preservation and urban planning have jointly shaped the built environment of Hungarian city-centres with protected areas, and as such, have passed-down underlying concepts, practices and built legacies. The topicality of research arises from the scarcity of literature which has so far produced only fragmental accounts, for example, the texts authored by Gábor Winkler (1941-2015) which have explored inherited discourses, practices and frameworks and allude to international influences. Moreover, topicality is given by the presence of contemporary issues, first and foremost the deregulation of preservation frameworks that have culminated in the dissolution of the National Office of Cultural Heritage in 2012. Another aspect of relevance is the pervasiveness of common narratives, especially that of the 'Golden Age' from which present-day practices have allegedly degraded.

The underlying analysis operates on two levels – national and local – introducing the city of Eger as a case study. The capital of the Heves County is chosen, on the one hand, for its role in the Hungarian discourse on historic cities, being among the first ones with a protected area. On the other hand, it is seen as a telling example of the dynamics of the geographic and economic national periphery under socialism. The aim is to explore adherence and gaps between nationally streamlined and local planning practices, as well as to identify potentially overlooked criticalities and contradictions.

Fig.1 - View on two urban blocks before 'reconstruction' works, ca. 1967 [MÉM-MDK 066.060N]

Fig.2 -Construction site in the city-centre of Eger (Bajcsy Street), 1968 [MÉM-MDK 86.068N]

Fig.3 - Example of an 'infill-development' (Bajcsy Street), 1972 [MÉM-MDK 099.450N]

The analytical work is based on a range of primary and secondary sources. The core is, however, a combination of archive and bibliographic references authored by planners and preservation experts. In terms of planning documentation, three relevant corpora have been considered. One is the collection of passed-down documents authored or received by the National Inspectorate for Monuments. The second is constituted by the documentation inherited from the Urban Planning Institute. The third relates to the planning documents of local state planning offices, which were active in Eger and beyond.

Research findings are divided into four chronological sections. The first deals with the potential origins of urban-scale preservation and the unfolding of the pervasive state planning system after the consolidation of state-socialism in 1949. In this, pre-war inheritances and key developments under the new regime are being traced, introducing the continuity of discourses, milestones for the codification of area protection as well as the rise of radical shifts for planning professions. Both continuities and discontinuities are presented in reference to legal texts, specialised literature, pioneering surveys and projects from the respective period. The second section elaborates on the two instruments of the national agenda which can be regarded as fundamental, i.e., the protection of 'areas of heritage significance' and the emergence of 'city-centre reconstruction' programmes. This involves a reassessment of the renewed setup of heritage agencies established in 1957 and the principles of the resulting system of 'monument planning'. Findings are based on archive documents from the first years of the National Inspectorate of Monuments and the Urban Planning Institute. As for protected areas, the thesis elaborates on the theoretical groundwork of superintendent László Gerő (1909-1995), who had theorised the specificities of historic cities in Hungary. The analysis includes a critical look at the selection of cities and the delimitation of the first protection areas. City-centre reconstruction is analysed through the lens of planning tools starting from early visions formulated by urban planner and Deputy Minister of Construction Imre Perényi (1913-2002), especially via manuscripts and reports from 1962 onwards. This involves the detailed presentation of new planning tools implemented since the mid-1960s. The third section traces how nationally streamlined principles have translated into regulation policies and modes of interventions. It looks at the gradual evolution of planning methodologies against the background of the growing awareness of urban-scale preservation and the conceptual shift from 'reconstruction' to 'rehabilitation'. Cross-reading archive sources and specialised journals, competition and planning proposals emerging in the 1970s and 1980s are taken as main reference point. In these, the investigation pays special attention to the seminal role of András Román (1929-2005), who contributed, among others, as chairman of the Washington Charter for the Conservation of Historic Towns and Urban Areas of 1987. The last section has a two-fold purpose. For one, it is dedicated to the articulation of final remarks derived from the analysis of urban conservation in Hungary from the pre- and post-revolution period. For the other, it focuses on the impact of salient practices on post-socialist trajectories after the political change of 1989, alluding to continuities and discontinuities as well as passed-down legacies.

IMPROVING ACCESSIBILITY AND EXERCISING PROTECTION: ACTIVITIES AND EXPERIMENTATION IN THE TERRITORY OF THE *SOPRINTENDENZA DI CREMONA, MANTOVA E LODI.*

Giulia Bressan - Supervisors: Maria Cristina Giambruno, Gabriele Barucca

The research project – launched as a collaboration between the Politecnico di Milano and the *Ministero della Cultura* (*MiC*) through an executive PhD, and thus conducted by combining the specificities of academic research with the protection activities carried out by the author in their role as architect official at the *Soprintendenza archeologia, belle arti e paesaggio di Cremona, Mantova e Lodi* – aims to investigate the process of improving accessibility at the urban scale in relation to the protection duties held by the aforementioned *MiC*.
Interest in the topic has developed since the early years of the professional career as a government architect (since March 2018). The opportunity to engage with several complex design projects aimed at improving accessibility in monumental contexts – which also had significant and inevitable repercussions at the urban scale (Fig. 1) – stimulated the need to investigate the delicate relationship between the demands of conservation and accessibility. This analysis is consistently filtered through the unique perspective of the *Ministero* responsible for ensuring a balance between the two.
In order to better define the research's aims, especially given its dual nature – theoretical, in relation to the PhD programme, and practical-operational, in relation to the protection activities – the so-called *research question* was initially established (*How is it possible to reconcile protection requirements with the transformation of the historic city, regarding the need to improve accessibility and enjoyment for all according to a shared vision?*): this question proved to be of fundamental importance both for clearly defining the research objectives and for addressing the specificities of the executive PhD.

The research path has therefore been structured around the pursuit of the general objective mentioned above, starting from the examination of the cultural framework within which the importance of accessibility is today recognised (chapter 1), the relationship that links this issue to the discipline of conservation (chapter 2), the role and limits that the *MiC* assumes in relation to this relationship, with particular reference to the urban scale (chapter 3), the in-depth analysis of the activity carried out by the *Soprintendenza di Cremona, Mantova e Lodi* in relation to these issues, critically analysed (chapter 4) and up to the definition of some proposals of an experimental nature aimed at realising that "shared vision", that organic reflection introduced with the *research question* (chapter 5).
At greater length, the initial part of the study therefore summarizes the theoretical knowledge gained during the research, attempting to reconstruct an updated framework of the main concepts underlying the work (primarily that of accessibility, including its most recent and mature meaning) and to investigate the contribution of conservation disciplines to the changing meaning of accessibility. The third chapter, which bridges the theoretical and more practical aspects, highlights the validity of the experiments initiated by two *Soprintendenze* (including that of *Mantova*) as possible alternatives to the current regulatory "limits." The final two chapters provide a snapshot of the operational activities undertaken during the doctoral years, both in terms of a critical analysis of what has occurred within the *Soprintendenza*'s territory, starting from specific surveys undertaken in the three provinces (regarding the authorized interventions and the implementation status of the P.E.B.A.), and in terms of defining a methodological proposal that systematises all previous acquisitions, attempting to develop an answer to the oft-referenced *research question*. The final part of the project attempted to translate the theoretical insights from the first part of the research and the operational experience conducted in the area into an experimental methodological proposal, applying it within the regulatory and organizational framework that currently governs conservation activities and a real-world case study. Specifically, the proposals in this phase of the research focused on part of the municipality of Soncino (Fig. 2) in the province of Cremona. This municipality, characterized by a medieval historic center enclosed within well-preserved city walls and a surrounding agricultural landscape, is of particular landscape interest due to the system of two-way relationships existing between the elevated village and its surroundings (Fig. 3). From a methodological standpoint, by integrating specific orientations on urban accessibility into the «prescrizioni d'uso» of the "vincolo paesaggistico" – a highly interesting innovative element introduced by the *Codice dei beni culturali e del paesaggio* in 2004, but certainly still underutilized today, as confirmed by a nationwide survey – the research attempted to identify a possible tool capable of guiding interventions on urban space, the existing built environment, and the historic city in its complexity. This tool aims to balance the demands of conservation and accessibility, following the previously mentioned logic of a "shared vision".
The methodological proposal conducted here for the Soncino case study – through which an unprecedented and original, yet realistic and reliable, answer to the *research question* was attempted – has therefore allowed for the application and enhancement of the theoretical insights gained during the research. More importantly, in line with a more updated and mature vision of accessibility and a research perspective typical of a PhD programme, it has enabled an exploration of how accessibility can constitute a central, priority, and unavoidable issue even within a precise and well-defined protection instrument (such as the "vincolo paesaggistico"), particularly when intervening in a context as complex and delicate as the historic city.

Fig.1 - Piazza Leon Battista Alberti in Mantua, the subject of a redevelopment intervention launched following a design by Archiplan studio in 2019: the redesign of the square was traced by recovering evidence and traces derived from the interpretation of pre-existing structures. These became the layout for new walkways made accessible to all (featuring suitable stone paving, tactile paths, appropriate slopes, as well as equipment and seating designed to provide information for people with visual impairments) | *https://archiplanstudio.com/*

Fig.2 - Orthophoto of the municipal territory of Soncino with the village within the walls and the fortress clearly recognisable, as well as the areas of expansion outside the walls, the agricultural landscape surrounding the village and the Oglio river which defines its eastern border | *Landscape Archive of Sabap-CrMnLo, Cremona Protection Section, Landscape Constraints*

Fig.2 - The Rocca di Soncino, a privileged vantage point due to its location higher than the village, yet elevated above the surrounding countryside, serves as a focal point for the surrounding landscape, thus establishing a system of two-way connections of particular landscape interest | *Photographic documentation of the site inspection on 9/06/2022.*

HYDRAULIC BINDERS AND 'GREEN' PLASTERS FOR THE PRESERVATION OF THE ARCHITECTURAL HERITAGE

Maria Cecilia Carangi - Supervisor: Cristina Tedeschi

Co-Supervisor: Monica Lavagna

This doctoral research, developed within the framework of the PON-FSE-REACT-EU fellowship "Research and Innovation" focused on green-oriented topics and stemming from the call *Hydraulic binders and green plasters for the conservation and strengthening of architectural heritage*, originates from the need to critically analyze conservation products currently available on the market, with particular reference to ready-mixed plasters labelled as green (GLRMP). GLRMP are increasingly adopted in architectural heritage conservation and are commonly promoted as sustainable solutions compatible with historic masonry; however, the criteria underpinning these claims are often ambiguous, inconsistently defined or supported by incomplete documentation, raising critical concerns regarding their actual environmental performance and technical suitability. While, in the Italian conservation context, such products are generally expected to be cement-free and formulated with hydraulic or natural hydraulic lime (NHL) in compliance with established principles of material compatibility and durability.

An in-depth review of manufacturers' technical documentation reveals that cementitious components are frequently present and not always transparently declared, hindering reliable sustainability assessments and potentially compromising compatibility with historic substrates.

As an initial step, this thesis addressed the lack of a standardized definition of the term "green product" by critically reviewing its interpretations in the scientific literature—focused on life-cycle impact reduction, low-impact or recycled materials, local sourcing and durability—and applying these criteria to GLRMP, highlighting the conceptual gap that distinguishes *green* from already codified terms such as *sustainable* or *ecological*.

Five GLRMP specifically intended for restoration were analyzed from a physical, mechanical and hygric point of view, alongside durability testing under accelerated freeze–thaw cycling (FT) and salt crystallization (SC) conditions.

Concurrently, with the LCA (Life Cycle Assessment) methodology, the components of the mixtures and the production stages (system boundaries from cradle to gate) most responsible for environmental impacts were identified.

Durability and LCA results obtained are described in Figure 1. The experimental results demonstrate that binder type plays a decisive role in governing mechanical behavior, porosity and moisture transport, with formulations containing alternative hydraulic binders exhibiting higher strength, reduced porosity and lower capillary uptake, whereas NHL-based plasters generally show lower mechanical performance and greater susceptibility to moisture ingress.

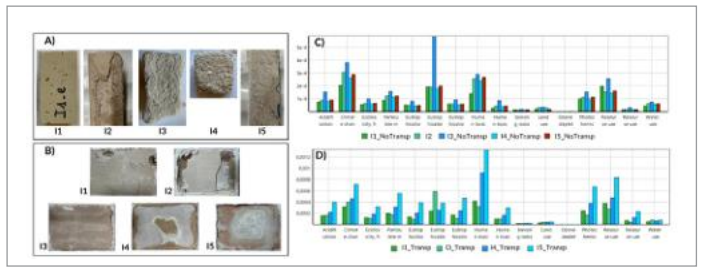

Fig. 1 - Aspect of the plasters at the end of the durability test and LCA results. A) Specimens subjected to FT cycles; B) Plasters applied on masonry mock-ups and subjected to SC test; Environmental impact related to the mixtures production without transport contribute-no transport scenario (C) and with transport contribution- transport scenario (D).

Pore size distribution proved to be a key parameter influencing durability, as materials characterized by very fine or very coarse pore structures limited liquid transport and exhibited greater resistance to thermal stress, while intermediate pore ranges were associated with significant damage under freeze–thaw exposure. Conversely plasters with high capillary absorption facilitated salt migration toward the surface, promoting efflorescence, whereas plasters with restricted transport favored salt accumulation at the plaster–masonry interface, triggering sub-surface crystallization phenomena.

LCA results indicate that mixture production significantly contributes to impact categories such as climate change, freshwater eutrophication and fossil resource depletion, while raw material transport emerges as a critical factor capable of substantially altering the overall environmental profile. Plasters produced with locally sourced materials exhibited reduced impacts when transport was included, whereas products with long-distance procurement showed markedly higher burdens across several environmental indicators.

Overall, this research highlights the complexity of defining sustainability in architectural heritage conservation, demonstrating that simplified green labels or material-based assumptions are insufficient to support informed decision-making. Products that appear environmentally favourable may prove unsuitable if limited durability or compatibility leads to premature failure and repeated interventions increasing the long-term environmental footprint, while higher-impact formulations may represent more sustainable solutions if they ensure long-term performance and respect for the historical and environmental context.

The thesis therefore advocates a holistic, context-sensitive approach to material selection, integrating technical performance, durability and LCA to support restoration strategies that genuinely reconcile heritage conservation with environmental responsibility.

ANCIENT TEA HORSE ROUTE (ATHR) CONSERVATION FROM A CULTURAL ROUTE PERSPECTIVE: IDENTIFICATION, MANAGEMENT AND ARTICULATION – THE CASE OF THE YUNNAN SECTION

Wenshan Chen - Supervisor: Andrea Pane

Cultural route heritage is a significant type of World Heritage with profound historical and socio-cultural value, such as the Camino de Santiago, featuring diverse heritage categories including architecture, monuments, and cultural landscapes. Since the successful nomination of the Silk Roads, domestic attention toward such heritage in China has grown increasingly. Since the launch of the Belt and Road Initiative in 2013 and the inscription of the Silk Roads on the UNESCO World Heritage List in 2014, the concept of cultural routes has attracted growing attention in China. This has led to a surge in conservation practices and the preliminary development of a domestic framework including theoretical foundations, guidelines, and methodological tools.
However, as an emerging and evolving heritage category, the conservation of cultural routes in China still faces significant challenges in practice, such as ambiguous value identification, vast spatial scales, and complex cross-jurisdictional governance. In this context, the author clarifies the heritage concept of cultural routes and other easily confused concepts. Building upon an extensive literature review and field research, the two mainstream conservation models (European Cultural Routes and the American Heritage Corridor model) are discussed and analyzed.Taking the Ancient Tea Horse Route (ATHR), which served as a key corridor for tea-horse trade from China to Central and Southeast Asia and stands as one of the most emblematic cultural routes in Southwest China, as a case study, this dissertation examines the conceptual and practical challenges towards cultural routes heritage conservation.
It discusses how the value and significance of cultural routes can be systematically identified, interpreted, and managed within a coherent heritage framework.

Fig.1 - ATHR Cha An Tang section in Yunnan

Fig.2 - Tea landscape of ATHR in Yunnan

Fig.3 - Nakeli Village of ATHR in Yunnan

On one hand, by tracing the history of cultural route protection in China, it elaborates on the ideological shift in Chinese heritage conservation from static, individual entities to systemic preservation mindset. On the other hand, it analyzes the evolution of the cultural route concept in China through the case of the ATHR, with a particular focus on material preservation efforts and the heritage management practices that combine theoretical research with empirical analysis. Furthermore, the case of the ATHR is used to explore China's cross-regional management mechanisms for linear heritage.
The research findings indicate that, first, there is cognitive confusion regarding the core values of heritage. Preservation efforts are often fragmented and focus narrowly on individual architectural sites, neglecting associated landscapes and vernacular villages, or prioritizing tourism development at the expense of cultural and historical value. This results in many cultural heritage sites along the ATHR failing to receive immediate and proper intervention, thus facing threats from natural disasters, urbanization, and over-tourism. Second, although cross-regional heritage protection in China generally follows a top-down management system, there is a lack of clear management subjects in terms of collaborative governance, alongside issues of confused division of responsibilities and blurred boundaries. Furthermore, limited by a shortage of personnel and resources, a unified management agency or office has yet to be established.
Therefore, the author ultimately suggests a workflow aimed at improving the value recognition and management of cultural route heritage. From the perspective of systemic protection, it proposes the establishment of a dynamic, systemic perspective that integrates architectural, landscape, and intangible elements into a unified framework, thereby providing a more holistic and sustainable understanding of the overall significance of cultural routes. Meanwhile, taking the ATHR Pu'er section as a case study, it proposes a multi-level value interpretation strategy to coordinate issues of cross-regional governance, confused responsibilities, and value interpretation.
At the macro-level, representative corridors are selected for overall corridor planning, refining institutional mechanisms for cross-regional coordination; at the meso-level, a partitioning strategy of prioritized landscape units is adopted to capture the systemic interconnections between roads, architecture, and the environment, thereby mitigating the fragmentation caused by administrative boundaries; at the micro-level, it encourages community-led site management and interpretation approaches, which emphasizes the essential role of local engagement approaches in sustainable heritage stewardship.

DISPERSED CLAN VILLAGES IN THE BA-SHU REGION OF CHINA AND THE QU COMMUNITY IN LUXIAN: CENSUS, ARCHITECTURAL FEATURES, SETTLEMENT PATTERN, PRESERVATION ISSUES

Pan Jiang - Supervisor: Carolina Di Biase

This research explores the history and the present context of a dispersed clan village in Luxian, China, drawing on landscape and architectural palimpsests as primary material sources, coupled with bibliographic research and diverse documentary sources - both published and unpublished - as well as oral accounts. A pivotal discovery during my previous fieldwork with a Chinese university group - the 1935 *Qu Genealogy* - clarifies relationships among the former owners of dispersed houses before their redistribution during the 1951 Land Reform. This finding challenges the prevailing view that scattered dwellings in the Ba-Shu region functioned independently, instead revealing a distinctive settlement form: the dispersed clan settlement.
Focusing on the Qu case, the study begins by locating and mapping former Qu houses within the contemporary geographical landscape, guided by toponymic clues in the genealogy and cross-referenced with historical maps and interviews. This process enabled the identification of 80 former Qu family houses, as well as an ancestral shrine, a fortress, a school, a temple and a riverside street - far exceeding the twelve buildings currently recognized as heritage. These largely overlooked legacies were documented mainly through photography during field investigation.
Subsequently, the research applies building-archaeology methods to reconstruct a preliminary chronology of Qu houses' material remains. Spanning nearly three centuries, the construction of the Qu houses demonstrates notable evolutions in space use, materials, construction techniques, structural methods and decorative forms. Recurring and changes in these aspects provide a basis for establishing relative chronologies across different building components, most of which lack securely documented "absolute" construction dates - a process falling within the method of chrono-typology.
The research explores the architectural and constructional characteristics embodied in Qu houses, examining the layout, timber structures, and brickwork, and it contributes to the reconstruction of the chronology of Qu settlement. The findings date parts of the settlement to the early seventeenth century, representing rare survivals from the Ming dynasty - long assumed to have been destroyed in the wars of the late seventeenth century - and provide new insights into the architectural evolution from the early seventeenth to the mid-nineteenth century.
The research then reconstructs the formation and evolution of the Qu settlement by comparing the family's developmental trajectory with their construction and property acquisition activities.
It investigates the origins of this distinctive yet widespread settlement pattern in the Ba-Shu region, attributing it to Qing-era land policies on migrant resettlement. Furthermore, it examines how the clan maintained internal cohesion and organized itself within a dispersed spatial arrangement - contrasting with the clustered clan settlements typical in other regions of China - through an analysis of ancestral rituals, household division practices, and defensive strategies.
This study has revealed the historical and documentary value of the architectural and landscape inheritances of the former Qu settlement, yet these are at risk of loss due to both rural transformations since the Land Reform and current preservation practices that emphasize heavy restoration. Building on this census and the newly generated knowledge, the research underscores the necessity of conserving these palimpsests. This recognition forms the premise for defining the objects and methods of conservation, encompassing the subsequent investigation, documentation, analysis and treatment of structural and material decay, as well as the development of strategies for intervention and valorization.

Fig.1 - Distribution of former Qu settlement (Source of base image: Google Earth; mapping by the author)

Fig.2 - The dispersed rural houses in the landscape (Source: the author, 2025)

Fig.3 - The construction timeline of different parts in Qu-Yuan-Zi house. (Source of base drawing: surveyed and drawn by students from Chongqing University, 2014; analyzed by the author)

ARCHITETTURE RESIDENZIALI INDUSTRIALIZZATE NEL SECONDO NOVECENTO (1945-1991). PROSPETTIVE PER LA CONSERVAZIONE E IL MIGLIORAMENTO ENERGETICO

Laura Magri - Supervisor: Francesca Lucia Maria Albani

The doctoral thesis entitled *"Industrialized Residential Architectures in the Second Half of the Twentieth Century (1945–1991): Perspectives for Conservation and Energy Improvement"* is situated within the broader scholarly debate addressing the material, regulatory, functional, and cultural vulnerabilities of twentieth-century architectural heritage, while simultaneously exploring strategies for its conservation and enhancement. The research operates at the intersection of multiple fields of inquiry. On the one hand, it engages with international and national studies on energy efficiency in historic buildings, which adopt multidisciplinary approaches to define procedures, methods, and tools for the sustainable management of the built environment. On the other hand, it contributes to a growing body of research that has recently reassessed the cultural and technical significance of multifamily residential architecture constructed in the post-war period, understood as a material testimony to the plurality of responses to the housing challenges that shaped the second half of the twentieth century. Furthermore, the thesis intersects with critical interpretations of the industrialization of the Italian building sector, highlighting its specificities in comparison with other national contexts and examining its relationship with housing policies, economic frameworks, and systems of incentives that supported private initiative in residential construction.

Within this broad framework, the research focuses on the architectural heritage of multifamily housing realized through prefabricated elements and systems within the wider processes of building industrialization in Italy between 1945 and 1991, from post-war reconstruction to the enactment of Law 10/1991. This segment of heritage, characterized by a wide range of construction techniques, materials, and architectural expressions, remains only partially recognized despite its cultural relevance. Often marked by fragmented private ownership and rarely subject to formal protection measures, it is particularly exposed to the risk of inappropriate transformations. The primary aim of the thesis is to identify and critically assess the risk factors affecting the conservation of this heritage, in light of the broader vulnerabilities that characterize twentieth-century architecture. Particular attention is devoted to the role of the national regulatory framework and to the system of fiscal incentives for energy efficiency, especially in the context of the post-pandemic "bonus season," during which generous public policies promoted large-scale interventions in the building sector as a driver of economic recovery. While these measures have significantly accelerated energy retrofitting processes, they have also contributed, in many cases, to interventions that neglect the architectural, material, and cultural values of the existing fabric.

To address these issues, the research offers a comprehensive analysis of European and Italian regulatory developments concerning energy performance in buildings, including the most recent updates to European directives and their national transpositions. This analysis is complemented by an in-depth examination of fiscal incentive mechanisms, tracing their evolution from the late 1990s to the present and assessing their impact on the residential architectural heritage. The study highlights critical aspects of current regulations, particularly the rigid requirements for performance compliance, which do not allow derogations for non-protected buildings, thus often encouraging invasive interventions.

In parallel, the thesis reconstructs the reasons for the conservation of industrialized residential architecture, emphasizing the diversity of architectural outcomes and the multiplicity of cultural, economic, and technical conditions that shaped this heritage. It examines the role of private initiative in post-war housing production, the variety of dwelling forms in relation to social and economic factors, and the distinctive Italian approach to prefabrication, often described as a form of "customized industrialization." This approach reflects a unique synthesis of standardization and design specificity, resulting in architectural solutions that range from economically driven post-war constructions to more refined and critically acclaimed projects associated with the rise of the middle class and the work of architect-designers in the 1960s and 1970s.

The research is supported by both bibliographic and archival sources. A selected sample of case located in Milan and included in national register of important 20th century buildings — has been analyzed through original design documents, construction records, and archival materials preserved in civic and professional archives. This sample, although limited, reveals the breadth of architectural and constructive solutions associated with prefabrication and provides a basis for understanding recurring features, critical issues, and transformation potentials.

A further key component of the thesis is the critical review of current energy retrofitting practices through a selection of case studies. These are examined in order to assess the impact of energy efficiency interventions on the conservation of prefabricated residential heritage. The analysis considers a range of contextual factors, including the presence of established historiography, conservation status, planning regulations, ownership structures, and the types of fiscal incentives employed. Through this lens, the research demonstrates how such factors significantly influence the quality and outcomes of retrofit projects. Building on these findings, the thesis ultimately aims to outline an alternative scenario to the current dominant approach. It advocates for a shift from a logic of strict performance compliance toward a more flexible and context-sensitive notion of "performance improvement." In this perspective, interventions are calibrated to the specific characteristics, vulnerabilities, and latent potentials of the existing buildings, allowing for incremental and less invasive strategies that improve energy performance while preserving architectural values. This approach is particularly relevant for a segment of the building stock that, although extensive, has a relatively limited impact on overall residential energy consumption.

In conclusion, the research proposes a redefinition of the relationship between energy efficiency and conservation for twentieth-century residential heritage. By promoting adaptive, progressive, and critically informed strategies of intervention, it seeks to reconcile environmental objectives with the preservation of a significant yet still underrecognized component of the architectural legacy of the second half of the twentieth century.

REASSESSING THE PROTECTIVE ZONE AND ITS IMPACT IN YOGYAKARTA'S HISTORIC CITY CENTRE

Trias Mahendarto – Supervisor: Giuseppe Bertrando Bonfantini

This research examines the protective zone as a principal instrument in the preservation of historic urban environments, with specific reference to Yogyakarta's historic city centre. Within UNESCO frameworks, protective zoning is commonly employed to define spatial boundaries and regulate transformation processes across heritage sites. While this instrument provides a necessary structure for conservation, its application is often grounded in a static and object-oriented interpretation of heritage, favouring physical attributes over relational and temporal dimensions. Such an approach becomes particularly problematic in the context of living heritage sites, where spatial configurations and social structures are continuously shaped by ongoing practices, adaptation, and change. Yogyakarta represents a stratified urban condition formed through the interaction of multiple historical processes, including the Javanese cosmological planning system, colonial urban expansion, and post-independence development. The inscription of the city's Philosophical Axis as a World Heritage Site in 2023 has formalised a zoning system composed of core, buffer, and wider setting areas. While this framework aims to preserve the authenticity and integrity of the site, it also establishes a regulatory condition that tends to stabilise the urban form and prioritise the conservation of physical elements. In doing so, it limits the capacity of the historic city centre to accommodate incremental transformation and to respond to the evolving needs of its inhabitants.

The research adopts a combined methodological approach, integrating literature review, regulatory analysis, and comparative case studies. This approach allows the protective zone to be examined not only as a spatial instrument, but also as a governance mechanism that structures the relationship between built environment, historical interpretation, and living community. Through this multi-dimensional analysis, the research identifies three principal limitations. First, the current framework isolates heritage elements as discrete objects, rather than recognising their interdependence within a broader urban system. Second, the delineation of boundaries based on the Philosophical Axis provides only a partial representation of the city's historical development, excluding districts shaped by colonial and Chinese influence, economic, and infrastructural processes. Third, the role of the living community is insufficiently addressed, despite its fundamental contribution to the continuity of cultural meaning and everyday urban life. These limitations are reflected in the ongoing transformation of Yogyakarta's historic city centre. Increasing development pressure, the expansion of tourism-related activities, and the gradual conversion of residential areas into commercial functions contribute to processes of spatial restructuring and social displacement. In several areas, these dynamics weaken the relationship between inhabitants and their built environment, reducing the capacity of the site to function as a living heritage. Within this context, the protective zone operates primarily as a restrictive mechanism, regulating physical change while remaining detached from the socio-cultural processes that sustain the site.

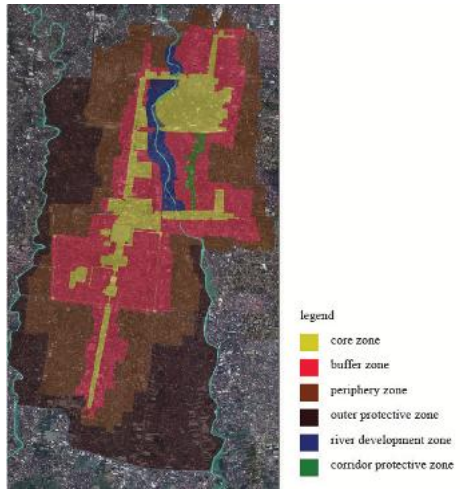

Fig.1

In response, the research proposes an alternative protective zone framework based on a broader and historically grounded interpretation of the historic city centre. Rather than relying exclusively on the Philosophical Axis construct, the proposed approach considers the urban expansion of Yogyakarta from its foundation until the end of the colonial period. This expanded definition incorporates districts such as Kotabaru, Pakualaman, and the principal historical corridors, recognising the urban fabric as a cumulative construct shaped by multiple historical layers, actors, and socio-political conditions. This redefinition allows the historic city centre to be understood as a relational system rather than a singular axis-based structure. The proposed framework introduces a hierarchical zoning system composed of six interrelated layers: core zone, buffer zone, periphery zone, outer protective zone, river development zone, and corridor protective zone (**see figure 01**). Each layer is defined according to its spatial configuration, historical relevance, and degree of interaction with the living community, and is governed by differentiated regulatory principles. The system establishes a gradient of intervention, in which stricter conservation measures are applied to areas of higher historical significance, while allowing controlled transformation in zones that mediate between heritage and contemporary urban conditions. This gradation supports continuity while accommodating necessary change within the urban fabric.

A central aspect of the proposed approach is the recognition of the living community as a constitutive component of heritage value. The framework acknowledges that intangible dimensions, including patterns of use, social relations, and everyday practices, contribute directly to the integrity of the site. Accordingly, regulatory strategies extend beyond the conservation of physical elements to include the protection of community stability, the management of tourism pressure, and the mitigation of displacement and gentrification processes. In this sense, the protective zone is repositioned from a rigid boundary into a structured yet adaptable system capable of engaging both spatial and social dimensions of heritage. The research demonstrates that the current protective zone approach is only partially effective, as it remains unbalanced in its emphasis on the built environment and insufficient in addressing the dynamics of living heritage. A multi-layered and context-sensitive interpretation provides a more coherent and operative response to these conditions. By integrating spatial, historical, and socio-cultural dimensions, the proposed framework contributes to the redefinition of protective zoning as a tool capable of preserving both urban form and living continuity. It also offers a transferable approach for historic cities facing the tension between preservation and contemporary urban transformation.

HERITAGE MANAGEMENT IN URBAN AREAS OF ITALIAN IMMIGRATION IN SANTA CATARINA AND RIO GRANDE DO SUL: IMPACTS, RESULTS, AND PERSPECTIVES FOR HISTORIC URBAN LANDSCAPES

Liliane Janine Nizzola - Supervisor: Giuseppe Bertrando Bonfantini

The study addresses the challenges of managing and conserving small urban ensembles in Brazil, focusing on listed sites associated with Italian immigration. Historic urban areas have lagged in protection in Brazil and globally, and those linked to Italian immigration in Brazil are even more neglected. The number of federally protected properties related to this heritage is alarmingly low: only eight isolated properties and two urban ensembles, all located in the states of Santa Catarina and Rio Grande do Sul. These buildings, primarily residential or religious, are generally in reasonable condition. However, within the listed urban complexes, preservation levels vary, though none appear to be in ruins. The federal government, which should play a leading role in heritage preservation, has done little to address this issue.

The urban landscapes surrounding these sites often lack cohesion, reflecting the shortcomings of existing heritage policies. This deficiency has led to a significant loss of historic assets and the destruction of potential heritage sites tied to this important chapter of Brazilian history. In protected areas, later architectural additions and urban interventions, such as electrical wiring and commercial signage, detract from the heritage value and unique character of these sites. This results in a fragmented cityscape that diminishes both the aesthetic and functional appeal of these places.

To illustrate this reality, two case studies are examined: Antônio Prado in Rio Grande do Sul and Urussanga in Santa Catarina, both colonies founded to settle Italian immigrants. Their architecture, traditions, festivals, cuisine, and even the dialects spoken by their residents reflect this cultural legacy, which part of the communities strive to preserve as an essential part of their identity. Brazilian conservation policies, however, have traditionally relied on aesthetic formalism and rigid restoration theories, treating cities as open-air museum monuments. These policies, often more authoritarian than participatory, fail to engage local communities and property owners, who already face significant financial burdens in maintaining their buildings. This disconnect has fostered resistance rather than collaboration, undermining the effectiveness of public policies meant to serve both property owners and urban residents.

Since the establishment of the Brazilian Heritage Conservation Agency (now IPHAN – Instituto do Patrimônio Histórico e Artístico Nacional) in 1937, conservation policies have evolved little. IPHAN still operates with a strong supervisory approach to private actions and has not sufficiently adapted to modern conservation principles developed over the 20th century. Public programmes for heritage preservation remain inconsistent, with only sporadic initiatives such as the Historic Cities Program (1970s), the Monumenta Program (1990s), and the Growth Acceleration Program for Historic Cities (2000s).

There is no continuous funding mechanism, dedicated annual budget, or specific fund to ensure long-term conservation efforts, leaving heritage preservation vulnerable to the priorities of changing administrations, an issue even more pronounced at the state and municipal levels.

With over a decade of experience at IPHAN, I have not only developed a strong commitment to improving heritage management but have also gained firsthand insight into the challenges faced by both property owners and conservation professionals. I understand the complexities of negotiations with owners, the struggles of heritage inspectors tasked with safeguarding these sites, and the institutional and legal limitations of IPHAN itself. This experience allows me to approach the subject with both practical knowledge and academic rigour.

Given the shortcomings of current heritage management approaches, maintaining the status quo is no longer a viable option. Significant reforms are necessary, especially in management strategies, as existing methods have demonstrated limited effectiveness. One promising tool for enhancing historic urban preservation is the UNESCO Recommendation on the Historic Urban Landscape (HUL). However, its adoption in Brazil has been constrained due to its innovative nature and resistance to a more progressive and integrated conservation philosophy. This approach advances beyond the traditional Western emphasis on architecture and material conservation, adopting a more holistic perspective that considers environmental factors, urban layers, and intangible cultural assets, elements highly valued in Eastern conservation traditions.

By shifting toward this broader framework, Brazil can incorporate heritage into an integrated urban policy and development, ensuring that historic urban areas remain not only protected but also vibrant, assets transformed into functional vectors of development and reflecting the communities they serve.

Ultimately, this investigation aims to raise awareness of the importance of preserving and conserving urban heritage characterized by modest architecture, ensuring that existing properties are not only adequately protected, conserved, and valued but also properly recognized as assets to the city's livability.

Fig.1 - Garibaldi Square of Antônio Prado, 2020. Source: https://onlinebuzz.com/traveldigest/@traveledge/be-welcome-to-antonio-prado. Access on 28/04/2022

Fig.2 - Downtown of Urussanga aerial view in 2002. Source: Alan Prado private collection

MOTORWAY BRIDGE RESTAURANTS. STUDIES TOWARDS THE PRESERVATION OF ITALIAN ARCHITECTURE «OVER-THE-TOLLWAY»

Verdiana Peron - Supervisor: Carolina Di Biase

Italy's motorway restaurant network originated in the shared vision of Mario Pavesi (1909–1990), owner of the confectionery company that bore his name, and the architect Angelo Bianchetti (1911–1994). Today, it stands as one of the most compelling expressions of Italy's postwar experimentation with architectural types and construction techniques tailored to the needs of travellers. This development unfolded alongside the expansion of the national motorway system between 1955 and 1975.

While Pavesi is widely credited with pioneering the concept of motorway service areas—combining self-service retail, bar, and dining facilities under the name "Autogrill Pavesi"—the Motta company quickly responded with its own "Mottagrill" chain, adopting distinct commercial strategies that were reflected in the architectural identity of its sites. Both companies drew inspiration from American fast-food models, which had already become widespread in the United States well before the automobile emerged as a mass phenomenon. The term "autogrill", coined by Pavesi from the American expression "grill room", would later become the official name of Italy's leading motorway catering provider, Autogrill. Over time, the term transcended its original branding and entered common usage as a generic label for roadside restaurants, regardless of the operator.

Within this context, the fourteen bridge restaurants built by the two companies are particularly significant—not only for their architectural and symbolic value, but also for the distinctive ways in which they engage with the surrounding landscape. Bianchetti, already well established for his prewar work in exhibition and retail design, was responsible for most of these structures. However, the building type also attracted the interest of other prominent figures in Italian architecture, including Melchiorre Bega, Carlo Casati, Renzo Zavanella, Raffaello Fagnoni, and Alfonso Stocchetti, as well as two of the most influential engineering practices of the twentieth century: Sergio Musmeci with Zenaide Zanini, and Studio Nervi.

These restaurants—true architectural "machines" for consumption and rest—quickly became iconic landmarks for generations of Italian motorists. Today, however, this distinctive form of roadside architecture faces significant threats.

Several factors contribute to its vulnerability: an architectural language long subject to criticism and increasingly misunderstood or dismissed; shifting social habits that have transformed patterns of travel and dining; and commercial pressures pushing operators toward profit-driven, often invasive redesigns. These challenges are compounded by issues common to many public buildings of the recent past, particularly the growing difficulty of complying with continually evolving safety and sustainability regulations.

Given their limited number, the gradual loss of these structures would erase an important chapter in the history of Italian architecture in the second half of the twentieth century. These concerns highlight the need for strong, well-grounded arguments in support of their preservation. In light of the vast and complex architectural legacy of the twentieth century—and the consequent need to make informed and selective preservation choices—this doctoral research seeks to deepen understanding of these buildings and to assess whether, and to what extent, this highly specific building type warrants protection for its cultural significance.

The introductory chapter reconstructs the complex political, economic, and sociocultural dynamics that shaped Italy's motorway network and its system of service areas. Particular attention is devoted to bridge restaurants, conceived as both landscape landmarks and commercial devices, reflecting American-influenced patterns of consumption and mobility. While their relational cultural value is emphasized, the study also underscores the need to understand them as architectural works—designed, constructed, and, above all, transformed over time. Adopting a comparative perspective, the research approaches these buildings as elements of a broader system rather than isolated objects.

The second chapter explores the Italian service-area model in relation to American roadside architecture, focusing on how functional and commercial principles were interpreted and adapted. The third examines the architectural and functional experimentation of bridge restaurants, characterised by a balance between standardisation and uniqueness. The fourth investigates structural and construction techniques, showing how engineering solutions contributed not only to performance but also to architectural expression.

The fifth chapter analyses the transformations these buildings have undergone, driven less by material decay than by the obsolescence of image, use, and regulatory frameworks, combining archival research with on-site surveys. The final chapter addresses current preservation frameworks in Italy, identifying key challenges and proposing criteria and strategies for safeguarding this heritage and guiding interventions through informed and conscious architectural and landscape design. The concluding pages of the dissertation open up avenues for future interdisciplinary research, aimed at developing a tailored strategy for the conservation of Italy's bridge restaurants, as well as for the dissemination of knowledge about the multiple factors that underpin their cultural significance.

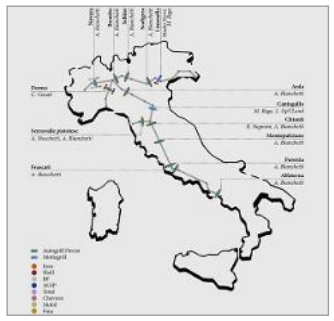

Fig.1 - Oil and catering companies operating service areas with bridge-type restaurant buildings: situation as of 1973

Fig.2 - Autogrill Pavesi, Novara: view in the 1960s (courtesy of Archivio Jan Jacopo Bianchetti) and in 2024

Fig.3 - Autogrill Pavesi, Osio Sopra (Bergamo): view in the 1960s (courtesy of Archivio Jan Jacopo Bianchetti) and in 2024

COLONIAL KARACHI'S ARCHITECTURAL HERITAGE: A RELATIVE STUDY OF BRITISH 19TH C ARCHITECTURE AND ITS PRESERVATION IN THE CONTEXT OF KARACHI, PAKISTAN

Tania Ali Soomro - Supervisor: Stefano Francesco Musso

The practice of colonization was initiated in the Western parts of the world and expanded eastward as a result of the process of Western industrial capitalism. Apart from Europe, India emerged as one of the first significant societies to be impacted by this phenomenon of colonialism. The present-day city of Karachi is the progeny of the British legacy. However, the city has a long and complex history that predates the arrival of the British. The earliest known history of the Karachi region dates to the Neolithic period, around 7000 BCE when fishing communities settled along the coast, inhabited by various groups over the centuries, including the Indo-Greeks, Scythians, and Arabs, and evidence of human settlements from as far back as the Stone Age has been found in the region. Though, limited information is available about the pre-industrialized settlement of Karachi prior to its annexation to the British Raj in 1839, but surface remains from a few older sites attest to its distant antiquity.

Pakistan, which was a constituent part of the Indian Subcontinent until its independence on August 14, 1947, has a wealth of British colonial heritage evident across many of its cities, including Karachi. Situated in the south-east of present-day Pakistan within the province of Sindh, Karachi remained the first capital of Pakistan from 1947 to 1956 until the establishment of Islamabad. Originally, it developed as a fishing village by the local Baloch tribes from Baluchistan (one of the 4 provinces of Pakistan) and Makran around 1729. Later, it grew as a lesser port town, with trading networks across the Arabian Sea with Oman and the Persian Gulf.

Recognizing its potential as a thriving port town, the city was annexed to the Greater British Raj in the year 1839. A 'unique cultural landscape' originated at the convergence of British culture as a metropolitan society and Indian (Karachi) culture as an indigenous society. This synthesis is often described as the 'Culture of the British in India'. This manifested in an innovative mix of imported and regional attributes to the built environment of the city of Karachi, resulting in the development of architectural styles such as Neo-Classical, Neo-Gothic, Indo-Saracenic, Edwardian Baroque, and others. At present, the British colonial town, with its architectural attribution, is referred to as the historic center of the city of Karachi, comprised of several historic quarters. The territorial architectural landscape of Karachi at present can broadly be divided into three categories: pre-colonial, colonial, and post-colonial. Each category exhibits distinct architectural characteristics.

Fig.1 - Current Political Map of Pakistan 2020
Pakistan shares borders with India to the east, Afghanistan and Iran to the west, China to the north, and the Arabian Sea to the south.
© The Survey of Pakistan, available at https://www.surveyofpakistan.gov.pk/SiteImage/Misc/files/political_map_pakistan.pdf

This research examines the in-between 'British Colonial Cultural Landscape' in Karachi and its interrelated mechanisms that function at different dimensions and constitute a complex socio-environmental network. This includes the manifestation of the city's territorial Colonial Built fabric, the urban nomenclature of the colonial settlement, and its evolution in the contemporary context. The inclusion of 'Historic Karachi' in the 2018 World Monuments Watch, is pertinent to its deteriorating state of preservation, depriving its citizens of a unique cultural legacy that is visible from its character. Thus, in light of the huge transformation of Colonial Karachi, this research aims to study the formation and development of Colonial Karachi through a temporal dimension to justify its historical, social, and architectural significance. This temporal change is investigated by reviewing the city's historic quarters shifting morphology with respect to studying the current conservation/ preservation practices and the fundamental characteristics responsible for these changes, including the heritage legislation, planning processes, and the current geo-political context addressing the conservation/ preservation of the historic ensemble of Karachi. The research also identifies and analyzes Karachi's regional and vernacular architecture before British annexation in 1839, together with the tangible variables - such as material, structure, or workmanship, etc. driven by the intangible variables – such as social, economic, and political, etc. that influenced the architectural development of the colonial Karachi, through selective projects as case studies. The research will also emphasize comprehending the various layers of the city's approach to urban heritage and examining how historic structures within their larger urban context have endured in the light of the prevailing heritage legislative framework. The existing heritage legislative framework tends to focus more on individual monuments, reflecting a monument-centric approach, instead of provisions that address the necessity of preserving urban areas and landscapes. Thus, this scenario presents a significant opportunity for an academic investigation within the local preservation framework in Karachi.

The methodology followed for this research is based on an interdisciplinary approach, establishing overlaps between several fields of knowledge, including the history of architecture, historicity, historic built and urban conservation, and heritage studies. The process followed for this research is mainly qualitative, following the triangulation method, where several mixed methods are adopted and combined to get a unified conclusion. In the absence of architectural or cadastral information, a number of regional and international archival consultations are conducted, including maps, relevant historical documents, inventories, newspapers, documentaries, etc.

In countries with deep colonial ties, independence brought a complicated duality that was challenging to reconcile, which often led to questions of identity, torn between the colonial past and their indigenous heritage, such as Islamic cultural roots. Additionally, independence introduced waves of migrants, particularly in the case of Pakistan after 1947, where many immigrants had limited knowledge or connection to the land that became their new home. This led to the rise of a migrant-dominated urban class, largely disconnected from Sindh's rich history. This has significantly reflected a deprivation of ownership and a scene of protection of the past heritage. This change had a negative impact on Karachi's colonial architectural legacy in particular, as properties that had been lovingly and uniquely built by their owners were occupied (post Indian subcontinent partition in 1947) by individuals who had little sentimental or historical attachment to them.

CONSERVATION GOES GREENER: THE WORD AND THE THING ARE CONTEMPORARY

Anna Turrina - Supervisor: Davide Del Curto

The concept of green conservation has been recently introduced to redefine conservation decisions and practices, placing greater emphasis on human and environmental safety across different endeavours and industries, in line with the ongoing green transition away from fossil fuel dependency and toward a sustainable, carbon-neutral, and environmentally responsible model. Within this evolving framework, this research investigates the interface between heritage conservation and environmental sustainability, recognizing their shared foundational perspective in alignment with the United Nations 2030 Agenda, the European Green Deal, and the Sustainable Development Goals.

Both fields are inherently oriented toward safeguarding resources and ensuring the well-being of present and future generations. While heritage conservation contributes significantly to social cohesion, cultural continuity, and economic development, the conservation profession itself is increasingly called upon to adopt sustainable practices and actively participate in the broader environmental transition.

In recent years, **the restoration sector has demonstrated a pioneering attitude in promoting innovation and quality within a greener paradigm**, often anticipating trends that later emerge in the wider construction industry. Environmental protection initiatives, sustainability reporting, and green marketing strategies for materials, products, and services are becoming increasingly widespread. This shift reflects the gradual emergence of a new conservation culture characterized by the frequent use of terms such as "green," "eco," and "bio," which signal a growing awareness of environmental responsibility within the field. However, despite this expanding interest, a comprehensive and shared understanding of what constitutes green conservation in the context of cultural heritage is still lacking. The existing body of literature on environmental sustainability, although extensive and well-developed in other disciplines, provides only limited and fragmented insights when applied to conservation practices. As a result, the conceptual and methodological framework of green conservation remains underdefined and often ambiguous.

Framed within this context, the research titled *Conservation Goes Greener: The Word and the Thing are Contemporary* addresses this gap by systematically examining green conservation through three interconnected perspectives: current theoretical approaches, terminology and regulatory frameworks, and emerging sustainable practices. Developed within the PON REACT-EU program designed to support doctoral research on green topics and to foster collaboration between academia and industry - this study adopts a dual methodological approach.

The first component, referred to as **the Word, consists of a theoretical and critical exploration of the concepts, definitions, and language** associated with sustainability in cultural heritage conservation.

The second component, **the Thing, represents an applied and entrepreneurial dimension**, carried out through an internship with Assorestauro Servizi, focusing on the environmental strategies, commitments, and practices adopted by companies operating in the conservation sector.

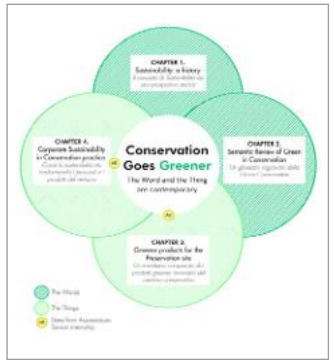

Fig.1 - The four pillars of the research: theoretical frameworks, terminology, materials, and conservation practices

By integrating theoretical analysis with empirical observation, this research aims to bridge the gap between discourse and practice, contributing to a more comprehensive and operational understanding of green conservation. Chapter 1 establishes the conceptual foundations of the study, tracing the historical evolution of sustainability within the conservation field and situating it within a broader regulatory and cultural context through the analysis of international agreements, national policies, and scientific literature. Chapter 2 provides a semantic and critical examination of green-related terminology, investigating how the scientific community and industry stakeholders interpret and apply these concepts, while also addressing and expanding beyond the traditional focus on toxicological concerns.

Chapter 3 presents a comparative inventory of innovative and environmentally oriented products used in conservation practices, proposing new evaluative criteria and metrics to assess their degree of sustainability and environmental impact. Chapter 4 focuses on the corporate dimension, analyzing sustainability practices within the Italian conservation sector, examining levels of adoption, methods of measurement, and the ways in which sustainability is communicated and implemented in professional contexts.

The findings of this research highlight several critical issues that characterize the current development of green conservation. Among these are the absence of standardized and universally recognized criteria for certifying the sustainability of materials and products used in conservation, the limited responsiveness of regulatory frameworks to evolving market demands, and the widespread tendency among stakeholders to rely on green narratives and self-promotional strategies that are not always supported by measurable or verifiable evidence of reduced environmental impact.

In conclusion, this study offers a reflection on the reciprocal relationship between sustainability and heritage conservation. On one hand, the growing emphasis on sustainability is reshaping the conservation market, influencing practices, materials, and professional expectations. On the other hand, the adoption of greener approaches within the conservation sector is contributing to the redefinition and enrichment of the concept of sustainability itself, opening new perspectives for its application in cultural heritage contexts.

MODERNIST ARCHITECTURE IN TRIPOLI, LEBANON: AN INTERNATIONAL PANORAMA, A NATIONAL HERITAGE (1955-1975). STRATEGY FOR CONSERVATION

Joe Zaatar - Supervisor: Francesca Lucia Maria Albani

This thesis presents the systematic study of modernist architecture in Tripoli, Lebanon, and its suburban area between 1955 and 1975, moving beyond the widely recognized Niemeyer-designed Fairground. It compiles and analyzes a comprehensive corpus of projects both built and unbuilt, designed by local and foreign architects, demonstrating their architectural, historical, and technological significance within a broader regional and international context. Through this expanded lens, the research repositions Tripoli not as a peripheral case, but as a site of complex modernist production shaped by political ambition, cultural negotiation, and uneven development. It also acknowledges the condition of progressive marginalization and exclusion that the city of Tripoli has faced since the 1950s, albeit with fluctuations, within national development agendas, a condition that has directly and indirectly affected the fate of its modern architectural production.
The study is grounded in archival research, oral testimonies, field surveys, and onsite documentation. This multi-layered methodology allows for the reconstruction of fragmented narratives and the identification of actors, networks, and design intentions that have remained largely overlooked. Particular attention is given to the International and Permanent Fairground project, designed by Oscar Niemeyer **(figure 1)**, whose scale, programmatic ambition, and symbolic charge render it a paradigmatic case within the Lebanese and Middle Eastern context. Conceived initially as a "ville radieuse" within the city **(figure 2)**, open and forward-looking, the Fairground was intended to embody a national vision of progress, economic development, and cultural continuity. Yet its subsequent history, marked by interruptions, enclosure, looting, and progressive decay, reveals the tensions between projected futures and political realities.
The research investigates the conditions that have contributed to the vulnerability of this architectural (unconsidered yet) built heritage, encompassing both tangible and intangible dimensions, as well as built and unbuilt components. These include the impact of the Lebanese Civil War, the absence and then inconsistency of state-led preservation policies, and the persistent marginalization of modernist architecture within dominant heritage discourses. Buildings constructed with advanced technical expertise are today subject to material degradation, inadequate maintenance, and inappropriate, non-conservation interventions, raising urgent questions about the transmission of knowledge and the capacity for conservation. In this context, modernism emerges not only as a stylistic or historical category, but as a fragile cultural construct whose meanings are continuously reshaped by conflict, neglect, personal and family interests, and shifting societal values. In the last two decades, International initiatives (UNESCO, Getty, UIA, Expertise France, among others) have generated increased attention; in particular, the Minjara initiative operated a qualitative and promising form of local appropriation, which, however, did not produce sustained long-term outcomes (closing in 2024).

Fig.1 - Intrados of the Grande Couverture at the roof incision. View from within the Fairground, facing Tripoli's hillside. Photograph by the author, early 2019

Beyond its physical dimension, the thesis engages with the intangible aspects embedded in these architectural works.
It examines how modernist projects articulated a dialogue between tradition and innovation, projecting familiar spatial and formal elements into a language of progress. In the case of the Fairground, this translation reflects a deliberate attempt to reconcile local identity with a forward-looking national narrative, offering the population a vision of modernity that did not negate, but rather reinterpreted, existing cultural references.
However, the successive phases of conflict and post-war reconstruction have altered these meanings, producing layers of collective memory that oscillate between aspiration, trauma, and disillusionment. The research proposes to resolve the subject matter of historical continuity rather than obscuring these stratifications.
The thesis also critically examines Lebanon's legal frameworks, planning instruments, and institutional practices related to heritage protection, with particular reference to Tripoli's master plans and their implementation. It highlights the gap between formal regulations and their practical enforcement, as well as the broader climate of mistrust that has often undermined conservation initiatives. Within this environment, the Fairground and other modernist sites have been subjected not only to neglect, but also to speculative interests and misaligned development priorities, further complicating their preservation.
Adopting a dialectical approach, the research follows a structured methodology articulated through thesis, antithesis, and synthesis, employing analytical tools that are both valid and applicable within the complex Tripolitan context, with the aim of safeguarding a heritage often disregarded by many, extending beyond Niemeyer's work, yet characterized by high architectural, engineering, social, and political value. It considers the role of local communities, emerging forms of civic engagement, and the reactivation of collective awareness as possible vectors for redefining the value of modernist heritage, while also emphasizing the fundamental role of education, particularly the need to reintegrate knowledge of modern architectural heritage into school and university curricula, as a long-term instrument for cultural recognition and preservation.
This perspective does not seek to idealize participation, but rather to question how a renewed sense of belonging and recognition might be constructed around sites that have long been excluded from dominant narratives.
Ultimately, the study reframes Tripoli's modernist architecture (**figure 3**) as a distinct and multifaceted cultural heritage, whose significance lies not only in its material presence but also in its capacity to embody unresolved historical trajectories. Without reducing these works to narratives of loss or nostalgia, the thesis argues for their critical reassessment as part of a broader reflection on heritage, identity, and the future of the built environment in Lebanon.

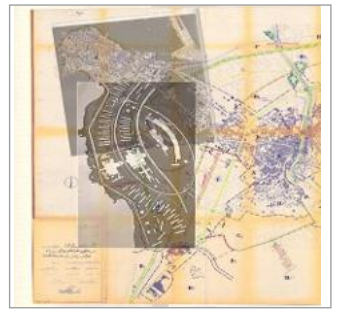

Fig.2 - Overlay of three different sheets. The first is a black-and-white photo of the first study model from 1962. The second is a black-and-white satellite image taken in 1971 showing the Fair under construction. The third is a colored Masterplan from 1971 featuring the elliptiocal Fairground site. The purpose is to show that the fair's architecture remained in the same position of the project, even though the Grande Couverture flipped on its longitudinal axis. Sources: the maquette from L'Architecture d'Aujourdhui 1962-1963, N°105 p.96, the map from Georges Doumani archive (courtesy Mrs. Nada Doumani), and the satellite image from Nina Jidejian's book *Tripoli à travers les ages*, p.42

Fig.3 - The "open" map of modernist architecture in Tripoli and its surroundings, edited by the author in January 2025. Source: autocad plan by Conseil du Développement et Reconstruction C.D.R. (courtesy Dr. Nabli Itani)

A POST-WAR SOCIALIST WORKERS' HOUSING IN SHANGHAI.
STUDY ON THE NO.1 ROAD PROJECT IN MINHANG SATELLITE TOWN (1958-1960), SIXTY YEARS LATER

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This study examines the industrialization of housing production in Shanghai during the Mao-era, and investigates the challenges of preserving its legacy in the context of contemporary urban development. Focusing on the 'No.1 Road' Project (1958–1960) in Shanghai's previous Minhang Satellite Town and tracing its origins, stages of implementation, and multiple contributions to the overall design of this urban area, this research aims to reread and re-evaluate its urban planning and structures, both as architectural artifacts and socio-cultural symbols. To this end, it adopts a multidisciplinary analytical framework, comparing studies concerning socialist state-led industrialization and urbanization, to the planning, design, and construction of this neighborhood, and later, to the changes introduced overtime by the authorities and public offices, or by private inhabitants, and their experiences of living in the houses and the other buildings of collective use.

As a result, the study tends to promote a preservation approach that can reconcile the historical significance of architecture intended for the working class of the 1950s and 1960s with contemporary living needs, while highlighting the broader challenges related to the preservation and rehabilitation of similar housing complexes across the country.

The research begins by placing post-war socialist workers' housing within the broader context of urban development and the evolving regulatory framework for architectural heritage protection in contemporary China. Despite their foundational role in shaping urban landscapes and urban lives over the past decades, these mass-produced housing complexes have become largely marginalized and overlooked within contemporary cultural narratives. Once emblematic of socialist modernity and collective living ideals, these buildings are now usually critiqued by both residents and government officers for their functional deficiencies and outdated design. Given that China's heritage protection legislation temporarily prioritizes pre-1949 structures, architectural interventions after that date — such as renovations, adaptive reuse, or demolitions — tend to prioritize utility over historical continuity. This has led to the erosion of the material and symbolic legacies of these sites. In response, this study aims to show that as exemplars of industrial and ideological ambitions of socialist China, the houses and public buildings of the 'No.1 Road' Project possess significant historical, documentary, and social value even if little documented and recognized to date. Moreover, it highlights that studying the original production processes of workers' housing and the subsequent adaptations made by residents in their everyday lives is essential for understanding and preserving what remains, and maintaining and making the best use of this fragile heritage.

The research is structured to address these key issues in a systematic way and synthesizes a wide range of sources: published and unpublished historical and contemporary research, news reports, project and site documentation from municipal archives, photographs and videos from 1959 till now, and most importantly, the documents and materials about buildings themselves and their inhabitants: the site reconnaissance produced sample mappings of the current conditions of the remaining buildings, and important materials were collected through interviews with residents which, especially through the voices of the oldest among them, allowed the outlines of a possible "oral history" to be traced. They are direct testimonies and constitute a unique and original contribution to the knowledge of the object of study and the broader issues that this case, like many others, raises. Through described materials, the research investigates the "socialist" meanings and distinctive characteristics of the planning, design and construction of the selected case studies. It also examines the subsequent six decades of use, transformation and adaptation of the houses and public buildings designed for workers' families in this satellite town of Shanghai, as well as the causes and challenges involved in managing these changes. The study highlights how factors such as widespread neglect, uneven distribution of public services, fragmentation of ownership and jurisdictions, changes in lifestyles and preferences, limited durability of materials especially in the absence of maintenance, and the time-bound ownership, pose significant risks to the future of these structures. Consequently, some buildings surveyed are in an advanced state of disrepair, while others have undergone drastic alterations from their original designs.

The study concludes that the preservation of socialist workers' housing requires, as with older buildings, a deep technical and cultural knowledge. It not only makes the intervention project fully aware of the original construction features and the materials replaced, the degree of deterioration and change, and the current conditions of ownership and use — indispensable data to improve the state of the buildings by preserving their key spatial and architectural features — but also serves to improve the living conditions of the residents, enriching their lived experiences and the collective memories embedded in these spaces. There is a need to bridge the gap between the ideals, living conditions of the past and present realities, this research aims to emphasize the importance of socialist urbanism as a vital component of China's urban heritage. The findings and recommendations that have emerged contribute to a deeper understanding of the historical, cultural, and social dimensions of socialist building, offering valuable insights for contemporary urban conservation practices in China and beyond.