

MECHANICAL ENGINEERING | PHYSICS |
PRESERVATION OF THE ARCHITECTURAL
HERITAGE | SPATIAL PLANNING AND URBAN
DEVELOPMENT | STRUCTURAL, SEISMIC
AND GEOTECHNICAL ENGINEERING | URBAN
PLANNING, DESIGN AND POLICY | AEROSPACE
ENGINEERING | ARCHITECTURAL COMPOSITION
| ARCHITECTURE, BUILT ENVIRONMENT AND
CONSTRUCTION ENGINEERING | ARCHITECTURE,
URBAN DESIGN, CONSERVATION OF HOUSING
AND LANDSCAPE | ARCHITECTURAL, URBAN
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DESIGN | ELECTRICAL ENGINEERING | ENERGY
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| ENVIRONMENTAL AND INFRASTRUCTURE
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CHEMICAL ENGINEERING | INFORMATION
TECHNOLOGY | INTERIOR ARCHITECTURE AND
EXHIBITION DESIGN | MANAGEMENT ENGINEERING
| MATERIALS ENGINEERING | MATHEMATICAL
MODELS AND METHODS IN ENGINEERING



Chair:
Prof. Carolina Di Biase

DOCTORAL PROGRAM IN PRESERVATION OF THE ARCHITECTURAL HERITAGE

The Doctorate Course in Preservation of the Architectural Heritage was first held at Milan based Politecnico back in 1983. On the strength of a solid, long-standing research tradition, today overarching attention will be paid to currently crucial themes such as protection, design, intervention over the built heritage and landscapes, developing sustainable uses of natural and man-made resources in different areas of the world. 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; Istituto Superiore per il Restauro e la Conservazione ISCR; ICVBC-CNR, Milano); 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 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 programme, lasting three years, calls for the acquisition of 180 credits overall. 25 credits are offered by PhD courses (ten of them by PhD School). The academic plan of the PhD programme revolves around 3 main research areas, corresponding to the core courses:

- 1) Heritage and landscape preservation: culture and practice
- 2) Methods and themes of historical research. Construction History
- 3) Science and innovation in diagnostics of materials and structures. Rehabilitation of historical buildings

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

Underwater".

The remaining credits 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.

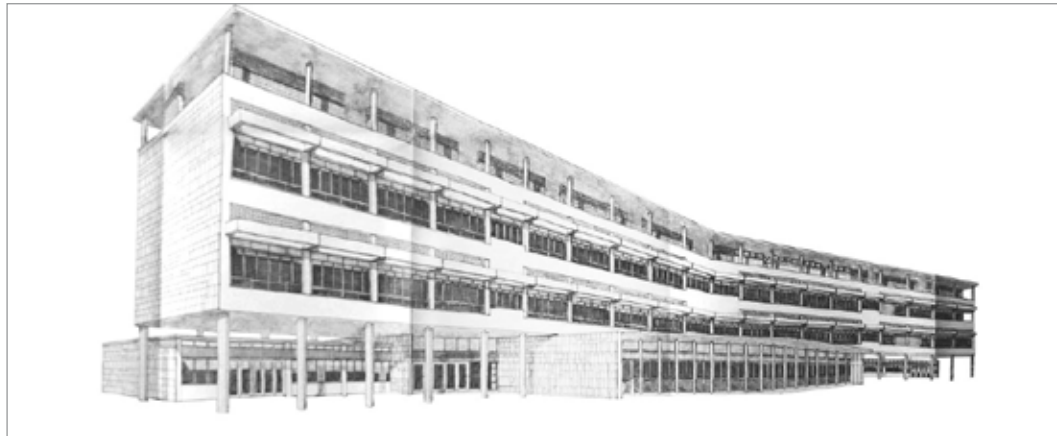
To the aim of their thesis research, PhD candidates have the opportunity to rely on facilities and



Fig. 1 - Bereket Han, the ex-Genoese Palazzo Comunale (1316) in Galata / Istanbul (S. Saġlam, 2018)



Fig. 2 - The symbiosis between cultural heritage and natural environment forming the relict cultural landscape Lower Danube Limes in Bulgaria. View from Dimum, Belene Municipality, Bulgaria (S. Sabkova, 2018)



**Fig. 3 - Colonia E. Vanoni in Borghetto Santo Spirito, Savona (1958).
Ing. Enrico Tirinzoni and Arch. Carlo Maspes
Perspective drawings of the main building
ACBS, pratica n. 109 del 1959 "Amministrazione Provinciale di Sondrio. Progetto nuova colonia marina "Ezio Vanoni" a Borghetto Santo Spirito (Segantin, 2017)**

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 ICVBC-CNR (the Institute for the Preservation and Enhancement of Cultural 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, as in the last year: buildings and artifacts related to Medieval Genoese Colonial heritage in Asia Minor and particularly in Istanbul-Galata (Turkey) **fig. 1**; discovery, representation and policy of preservation of the landscape of the Lowe Danube Limes and its Roman remains (Bulgaria) **fig. 2**; the twentieth-century heritage which had redesigned the Ligurian coast, as in the research regarding the seaside *colonie* for childhood **built** between the end of 19th and the seventies of 20th century **fig. 3**; the multidisciplinary investigation (observation and on site analysis, diagnostics, archival research) aimed to figure out the relation between original and restoration interventions in the case of Leonardo's painting of the "Sala delle Asse", in the Sforza Castle of Milan **fig. 4**.

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 alongside its methods; at the same time it features innovative, pioneering themes: research about the energy response of buildings targeted to the reuse of existing technical systems and to reducing the impact of new systems which, since long, have been extensively addressed by the PhD programme and at the heart of an International exchange with European universities and research labs; or the studies carried about the seismic vulnerability of buildings and in the military conflict areas.



Fig. 4 - Milan, Sforza Castle, Sala delle Asse, 1498. 3D processing and surface mapping, Copyright Milanese Municipality (all rights reserved), processing by Haltadefinizione and Culturanuova S.r.l. (2011)

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SANTA FOSCA ON TORCELLO ISLAND AND THE HYPOTHETICAL DOME

Antonella Manzo - Supervisor: Prof. Claudio Chesi

Co-Supervisors: Prof. Maria Antonietta Crippa, Prof. Giulio Mirabella Roberti

The church of Santa Fosca on Torcello Island can be defined as a *unicum*: it is based on a Greek cross plan with very short arms and a prolonged apse. The result of their intersection is a central square space, around which eight stone columns are disposed. The main peculiarity lies in the transition from the square central plan, to the octagonal disposition of the supports, which bear uncommon couples of overlapping masonry niches that, in turn, allow the transition from the octagonal disposition of the columns to the circular shape of the drum, finally covered by a wooden roof. Due to its particular architectural scheme, since the 19th century, the building became an important topic of debate concerning its connections with the Byzantine tradition. More specifically, the argument dealt with the parallelism with some Greek churches, developed during the 11th-12th centuries and currently called basilicas of the "octagonal domed type". Most noticeably, while the former has a wooden roof, the latter are centrally vaulted by a dome, which, however, in most cases was rebuilt after the collapse due to seismic events, rather frequent in the Balkan area. Unfortunately, no documentation exists that can testify to Santa

Fosca foundation period (only a document of 1011, reported in 1759 by Flaminio Cornaro, attests to its existence or coming erection) and the parallelism with the Greek churches does not lead to decisive opinions, able to provide final evidences on the reasons of its unusual configuration. The special emphasis on the link between Santa Fosca and the Middle-Byzantine churches of the octagonal domed type, furthermore, has arisen the question about the existence of an original dome. As a matter of fact, starting from the mid-1800s, several architects and art historians in studies related to Santa Fosca progressively mentioned the possibility that a dome was originally present in



Fig. 1 - Santa Fosca, Torcello Island, Venice

place of the current wooden roof. Among them, Pietro Selvatico Estense (1847) recognised that the mass and the stability of the pillars led to believe that a dome at least existed in the earliest intention of the architect, while Edouard Corroyer (1888) represented the section of the church with the dome. With respect to the controversial issue challenged throughout this work, the hypotheses are numerous, whereas the certainties are rather few. For this reason, the study has gone backwards, presenting at first the on-site analysis, specifically developed from the constructive and structural viewpoint. In this way, by investigating the material consistency of the architecture,

the visual inspection highlights the discontinuities present on the walls, due to interventions of different periods affecting the mechanical behaviour of the whole building. The crack pattern survey, compared to the deformations of the church, marked by a laser scanner survey leads to believe that the church is subject to ground settlements. This observation is coherent with the analysis of the 1800s-1900s manuscripts denouncing out-of-plumbs and severe crack patterns that were mining the stability of the church. Such considerations, however, are limited to a rather recent moment of the church history, and cannot provide detailed information on its more ancient past. In fact, apart from the document dated 1011, no other notices testify to Santa Fosca existence until the pastoral visitations of the 16th century and the inscriptions still nowadays present on site. Hence, the assumptions put forward about Santa Fosca origins since the mid-1800s are a basic issue to deepen its peculiarities. In particular, the hypothesis that a masonry dome belonged to the first concept of the building arose ever more doubts about its original configuration. More recently, furthermore, scholars have supposed that the dome was originally built and collapsed due to the strong seismic event of 1117, whereas some others think it was never built. Despite the importance of these theories, the present study broadly shows that they are not based on scientific demonstrations or facts reported by manuscripts, but come from

mere suppositions, which were confirmed author after author. Within this context, the structural analysis aims at providing additional tools to address the issues raised by the historiographical studies, and, in particular, the assumption of the hypothetical dome is investigated. In this regard, after deepening the structural response of the church with respect to the actions typical of the Venetian lagoon environment, the reliability of the hypothesis that a dome was present above the current drum is verified. To this aim, its stability is analysed at first under dead loads and then with respect to horizontal actions, with specific reference to the possible dome geometry according to the Middle-Byzantine and Venetian tradition. In this way, the assumptions present in the literature are recalled and their plausibility is proved. The several instruments today available to investigate the building and its history are considered in this framework to identify the most plausible assumptions about the earlier configuration of the church itself and, more specifically, about the original presence of a dome. Nonetheless, despite all the efforts, the achieved knowledge will always be limited in relation to the complex history that characterises ancient constructions, especially if these are a thousand years old, as in the case of Santa Fosca church. More generally, the present work uses the structural analysis to investigate the past condition of the building. In this regard, the studies elaborated since the 1800s have broadly influenced the

present knowledge on the history of ancient constructions; however, they were founded on interests and perspectives different from the rigorous viewpoints adopted nowadays. It is therefore important to challenge the assumptions reported in the past as certainties and the structural analysis procedures must be seen as an additional method to reach this goal.



Fig. 2 - The overlapping niches



Fig. 3 - Santa Fosca section with the dome as reported in Corroyer's *L'Architecture Romane* (1888)

THE RESTORATION OF WALL PAINTING IN THE SALA DELLE ASSE AND IN THE DUCAL COURT'S ROOMS INSIDE THE SFORZA CASTLE IN MILAN

Michela Palazzo - Supervisor: Prof. Carolina Di Biase

Co-Supervisors: Prof. Pietro Cesare Marani, Dr. Antonio Sansonetti

This research analyses the history and events behind Leonardo da Vinci's paintings in the Sala delle Asse, inside the Sforza Castle in Milan. The study primarily focused on two important/significant restoration interventions on the wall paintings, one dating back to the end of 19th century and the other one to approximately mid-20th century. This study's main aim is to get knowledge and a well-rooted understanding on the interventions made on Leonardo's decorations and how these interventions fit in the restoration techniques and frameworks of the time, also in order to extend the knowledge of the restoration history of the wall paintings in the Lombardia area from the mid-nineteenth century to the mid-twentieth century.

The room has been largely studied, however no research activity has ever been carried out on material data, observable directly on the wall paintings' surfaces, ancient plasters, explored with diagnostic investigations, and historical and documental data and the relation between the three.

Furthermore, the topic examined in this work includes research on some rooms on the ground floor of the Ducal Court since 1893, when traces of ancient decoration under the layers of drapery applied

when the stables of that area of the castle were in use, where firstly discovered. The research activity consisted in systematically combining historical and scientific data and in an organic activity of close observation and study of the art work, at least in the Sala delle Asse where there were scaffoldings, in order to gain feedback from the material used to compare it then with archival and historical documents.

The history of the interventions on the wall paintings of the hall has never been examined in depth,

therefore it was crucial to proceed by reconstructing the complex events that occurred for more than 60 years, starting from 1893 with the first major intervention on the paintings, until the middle of the twentieth century, when the restoration of the castle was carried out and the museum was reorganized after the damage due to the Second World War.

The decoration of the Sala delle Asse was never completed due to the departure of Leonardo da Vinci from Milan in 1498; indeed the walls remained in the preparatory



Fig. 1 - Milan, Sforza Castle, Sala delle Asse, 1498. The north corner before the last restoration, Copyright Milanese Municipality (all rights reserved), photo by Saporetti, 2008

drawing state while the vault and the lunettes preserve traces of ancient polychromy.

No specific information are available about the room until Luca Beltrami began to study the Castle in 1884, when it was still a barracks in use for military authority. Then the hall, together with that area of the Castle, was used as a stable: the walls and the vault were covered with several layers of dullness and the presence of the wall decorations was forgotten. Then Beltrami was able to start investigating the internal surfaces to search the decorations from the Sforza period; most of the polychrome wall paintings were found under the numerous layers of dull between 1893 and 1894. But the work of descialbo turned out to be destructive for the original pictorial film and so the total repainting was decided by the painter decorator Ernesto Rusca who realized it between 1901 and 1902. The study enabled to clarify, in addition to the role of Luca Beltrami and the other actors involved in the story, also the technical aspects of the intervention of Ernesto Rusca in the Sala delle Asse through the diagnostic and logical checks. The problem of the concealment of the remains of leonardesque painting was then dealt with by Costantino Baroni fifty years later, when he was director of the Civic Museums, during the restoration of the Castle after the war damages: the repainting of Rusca was lightened and pictorially blurred to lower the chromatic impact by the restorer Ottemi Della Rotta in a restoration operation carried out between 1954 and



Fig. 2 - Milan, Sforza Castle, Sala delle Asse, 1498. The Ernesto Rusca's repainting, Civic photographic archive, AM 441, photo by Fumagalli, 1902 ca.

1955. Ottemi Della Rotta, whose role in the restoration of wall paintings in the pre and post-war decades was highlighted for the first time in this research, carried out an intervention whose methodological choices were conditioned by the political leaders of the City of Milan. They wanted the hall and the whole Museum to be reopened to the public before the 1956 administrative elections, while the complexity of the work would have required a much longer time of realization. The investigations of this research confirmed this, as it emerged that Ottemi Della Rotta intervened on the polychrome part of the decoration of the Sala delle Asse only chromatically lowering the repainting of Ernesto Rusca of the early twentieth century, without removing it and without, therefore, leading to view of the remains of the 16th century pictorial film. Finally, it emerged that what we can admire today is a completely transformed environment compared to what Leonardo da Vinci wanted to achieve for his

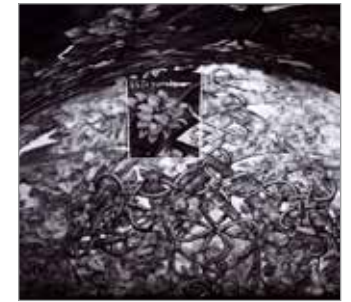


Fig. 3 - Milan, Sforza Castle, Sala delle Asse, 1498. The Ottemi Della Rotta's restoration intervention, Civic photographic archive, AM 427, photo by Perotti, post 1955

client Ludovico il Moro; what we can see today is only partially the idea that the great artist wanted to accomplish. The in-depth understanding of the choices made with the two main interventions on the decoration of the Sala delle Asse could not be distinguished from the knowledge and connection with the conservative history of the mural paintings of the court halls of the Ducal Court. For these last two, in this research, the presence of restorative painters involved in the various phases of intervention has been identified.

The final document produced by this study was divided into two parts: the first one concerns the history of the interventions that affected the wall paintings in the Sala delle Asse and the main halls of the Corte Ducale between 1893 and 1956; the second part relates to the current status of the wall paintings in the Sala delle Asse, with the study and survey of the traces of previous restoration interventions which are also based on the results of the most recent diagnostic investigations.

LOWER DANUBE LIMES IN BULGARIA: A RELICT CULTURAL LANDSCAPE. PAST TRANSFORMATION AND FUTURE PERSPECTIVES

Silva Sabkova - Supervisor: Prof. Dr. Gergana Kabakchieva

Co-Supervisor: prof. Maurizio Boriani

The research is dedicated to the problems regarding the preservation and management of the Lower Danube Limes in Bulgaria as a potential part of the trans-border World Heritage Site "Frontiers of the Roman Empire". The main objective of the study is to set a vision for the future of this cultural landscape by formulating methodological guidelines for the study of the territory, evaluation of its problems and potentiality, and what instruments of protection should be used in response. These are based on knowledge of the history and structure of the Lower Danube Limes in Bulgaria and refer to the experience of scholars who have worked on similar problems concerning other parts of the Frontiers of the Roman Empire. There are three main directions in which the present research is developed:

1. It seeks to demonstrate an approach towards the study of the territory in relation to the preservation of the Lower Danube Limes in Bulgaria, based upon a better understanding of the structure of the cultural landscape and the logic which the Romans followed when they constructed their frontier (including minor sites and ancillary features). This will support the efforts to identify preserved valuable elements

and relationships that are not so obvious, but need to be protected and enhanced. These elements would contribute to a better understanding of the Danube Limes as a whole by the public and for the preservation and even improvement of its integrity.

2. It aims to propose a mechanism for protection and management for all the elements of the cultural landscape – not only the most prominent key archaeological sites, but also the invisible and secondary sites, the environment of the sites, the historic elements of the landscape, the visual integrity of the system. This mechanism involves different legal, planning and regulatory instruments.

3. It intends to set criteria for acceptable actions and interventions regarding conservation, restoration,

presentation and use of the cultural heritage sites belonging to the Danube Limes, in order to preserve the authenticity, integrity and value of both the individual sites and the cultural landscape as a whole.

As the title suggests, besides the initial two chapters that explain further the grounds of this research and introduce the research section *Oescus - Novae*, the thesis is composed by two main parts. The first part is dedicated to the study of the formation and transformation in time and space of the material components of this cultural landscape – natural environment and elements created by man – various fortifications and infrastructure. All these elements have been interconnected and interdependent from the very establishment of the system.



Fig. 1 - Bulgaria. View from Nikopol Fortress. (Sabkova, 2017)

During the long history of construction and operation of the Danube Limes all of its components and the relationships between them have experienced a number of changes. After the abandonment of the Roman frontier, its elements become subject to other transformational processes that have shaped them to the state they have reached today. The exploration of these intricate transformation processes requires an interdisciplinary approach, leaning on existing researches from different fields: archaeology and history, geography, geomorphology, paleobotany and others whose conclusions and results serve as a basis to draw new conclusions about the formation of the Danube Limes. Other sources that have been involved include classical sources, historical maps, materials from archives, field observations. Having a good idea about the

formation of the cultural landscape reveals a lot about the logic that stands behind its structure and organization. In turn, this is a prerequisite for the determination of a more appropriate approach for its preservation as cultural heritage which must be conserved today and for the future to come. This problem is addressed in the second part of the thesis. The present research comes side by side with the efforts of the international expert community that has worked for years on problems concerning preservation and management issues of some sections of the Frontiers of the Roman Empire. Many methodological guidelines have already been elaborated by the experts and these form a valuable starting point for further elaboration. Many of the proposed guidelines are rather general and need to be specifically adapted, widened or entirely redesigned to

fit the realities of each individual national section of the Frontiers of the Roman Empire. The present research aims to do so for the Bulgarian section of the Frontiers of the Roman Empire. The objectives of this research however are not limited to this only; it has its own original contribution that may well be implemented in the existing general methodological framework for the FRE and could have application also for other section of the FRE, beyond the specificity of the Bulgarian Danube Limes. Major methodological contributions are for example the methodology for study of the territory needed for identification of the subject of protection and the methodology for categorization of sites in order to determine their priority within a general master plan. These are applicable for all parts of the FRE, and if modified, may be used when working with other kind of serial cultural heritage properties.



Fig. 2 - The chosen research section between the Roman fortresses Oescus – Novae (Sabkova, 2017)

FROM THERAPY TO HOLIDAY. ARCHITECTURE OF THE SEASIDE *COLONIE* FOR CHILDHOOD IN THE ITALIAN RIVIERA.

HISTORY AND PRESERVATION OF A MODERN HERITAGE

Francesca Segantin - Supervisor: Prof. Stefano F. Musso

Co-Supervisor: Prof. Giovanna Franco

The expression “seaside *colonia* for childhood” identifies the architectural complexes realized in Italy with the function of children care, education and entertainment, between the end of 19th and the seventies of 20th century.

These architectural complexes were originally designed as places for the therapy of sick and fragile children, belonging to the less well-off classes. By the time, other functions were added to the original one. Especially, these institutions assumed a strong educational and military mark during the fascist period, whereas in the second post war period, they became places for the summer entertainment of the Italian working-class children. Due to the articulate and intense history related to these buildings, their architectural shapes and styles are very heterogeneous. Some of the factors that contributed to define this architectural variety are related to their function, in balance between being a school, a hospital and a hotel; the lack of an architectural model to refer to, that left extreme freedom of expression to designers; the construction period, related to social and political influences; client’s requirements and territorial characteristics.

One of the interesting aspects of these architectures is related to their location and relationship with the surrounding landscape. They were built very close to the beach, far away from the cities and surrounded by parks. Due to their location they became, in most of the cases, landmarks, still recognizable within the built coastal landscape.

Since the end of the Seventies, due to the economic development and the spread of the wealth, occurred in Italy starting from the second part of 19th century which defined the decline in demand of children social tourism, the most of these architectures have been abandoned.

Nowadays, many *colonia* are not used anymore. As time went on, most of these buildings, have

been lost, due to demolitions and abandonment, while another part has been converted to other functions as hotels, schools and houses.

The research deals with the specific case, until now still not adequately studied, of the “seaside *colonia* for childhood” built in the Italian Riviera between the half of 19th and the end of 20th century. Compared to the most recent bibliography on the subject, mainly concentrated on the buildings realized during the fascist period in the coasts of Toscana and Emilia Romagna, the thesis addresses the phenomenon of the *colonia* in the Italian Riviera, in its complete evolution, both considering its architectural, social, historical and territorial aspects.

The reasons why most of these

architectures have never been studied before are related to their architectural features, in most of the cases not influenced by the modern language, and their design not linked to the most famous Italian architects of 20th century. In fact, Ligurian *colonia* were largely both inspired to the 19th century hospital, due to their sanitary function, and to coastal residential buildings.

That is because the most part of these *colonia* housed long term stay institutes, who welcomed sick and weak children, unlike temporary and daytime *colonia*, mainly realized in other Italian regions, in which modern architecture was used as a fundamental element of children education.

The thesis reconstructs the history of these complexes by adding a “part of knowledge” to the topic of the architecture of seaside *colonia* in Italy.

During the research, 189 *colonia* have been identified on the Ligurian coast. Few of these buildings, that has been cataloged, are already well-known to critics, while the most of them are still unknown. To date, many of them have been demolished, or re-converted, while some of them are in a state of abandonment and at risk of disappearance.

The research approaches also the relationship between *colonia* and coastal landscape, particularly how their presence contributed to the transformation of the landscape and to the urban seaside village development.

The research is based on multidisciplinary contributions from different topics as: history of tourism, history of Liguria and its architecture, touristic guide from 19th and 20th Century and medical texts.

The most part of the information has been found in local and regional archives located in Liguria, who preserved the building’s projects and technical reports related to their construction. By combining different kind of information it has been possible to reconstruct an initial framework

about the construction history of *colonia* in Liguria.

From the research emerges, also, a rich panorama of costumers and architectures spread throughout the territory. Finally, the analysis of the historical, architectural and landscaping characteristic of these buildings, considered both in their individual and global peculiarity, allowed to highlight their values and to arise the issue of the possible recognition of “seaside *colonia*” as elements of a “cultural heritage”, raising several questions, still in debate, about their possible future protection and, therefore, their fate.



Fig. 1 - Localities of the Italian Riviera with past or current presence of seaside *colonia* (Segantin, 2017).



Fig. 2 - Colonia “Bergamasca” in Celle Ligure, Savona (1895-1925). Current state of the colonia (Segantin, 2017)