

“Grandi Fabbriche” e “progetto minimo”: conservazione e restauro tra esperienza didattica e pratica professionale nell’attività di Carla Bartolozzi

“Grandi Fabbriche” and “minimum project”: preservation and conservation between educational experience and professional practice in the activity of Carla Bartolozzi

FRANCESCO NOVELLI

Francesco Novelli, professore associato di Restauro,
Politecnico di Torino, Dipartimento di Architettura e Design
francesco.novelli@polito.it

Il tema del restauro delle Grandi Fabbriche o di beni complessi rappresenta un comune denominatore nell’attività accademica e professionale di Carla Bartolozzi. Questo interesse, sviluppato attraverso esperienze condotte nel solco di un grande rigore scientifico e metodologico, si consolida nella sistematizzazione dei processi volti alla redazione del progetto di restauro per garantirne qualità e chiarezza. Un percorso lungo, condiviso in ambito accademico e nelle esperienze didattiche, così come nella pratica professionale in cui ha sempre perseguito, quale unico compromesso possibile, la sostenibilità del progetto di restauro.

The theme of the restoration of “Grandi Fabbriche,” or of complex heritage, is a recurring element in Carla Bartolozzi’s academic and professional activities. This interest, developed through experiences conducted with outstanding scientific and methodological rigor, is consolidated in the systematization of the processes to draft the restoration project in a way that ensures its quality and clarity. A long journey shared in the academic field and teaching experiences, as well as in professional practice in which she has always pursued the sustainability of the restoration project as the only possible option.

Introduction

The contribution presented does not aspire to be a complete reflection on Carla Bartolozzi's expertise, aiming, instead, to outline the themes and areas of research of her activity, closely linked to the quality control of the restoration project in the complex transition from its drafting to the operational and construction phase.

A journey in which didactic skills and professional practice converge, constantly updated with disciplinary orientations, the contributions of new technologies at the service of cultural heritage, and regulatory adjustments. Improving the process of drafting the restoration project is addressed by maintaining a careful balance between the articulated process of knowledge and its communication, avoiding reductive simplifications.

The approach to the theme of the "Grandi Fabbriche" with participation in the organization of the Specialization Courses (1986-1988) and the subsequent editing of the Proceedings with M.G. Cerri, constitutes a common thread that connects didactic activity and professional practice with a temporal continuity that is practically neverending. In recent years, the debate on urban integration and sustainability has partly directed Carla Bartolozzi's interests in investigating the potential for regeneration of large architectural complexes (urban and extra-urban) to launch micro-projects aimed at public functions, developed in collaboration with stakeholders, local bodies and institutions, to ensure greater social inclusion and active participation in transformation processes by local communities.

1. Background and learning

Andrea Bruno, who, along with Maria Grazia Cerri, can be considered one of Carla Bartolozzi's mentors,

[...] constantly refers to doing as the only true term for evaluating the designer's intervention – the design solution is constantly proactive, executable and judge able only if executed – and it is precisely starting from this data that one can begin the reconstruction of the integrity and density of the process¹.

If what is attributed to Bruno's activity may have influenced Carla Bartolozzi in her early years of training, his teaching is expressed – as already highlighted – not only through the exercise of professional practice but also and above all, through teaching and moves from the awareness of the relationship between *Knowledge and expertise*².

Interest in training was applied in different areas in the early 80s, finding direction and clear systematization in the Specialization Courses in *Architectural restoration for grandi fabbriche* (1986/1987 - 1987/1988). The first, subtitled *Methodology of analysis and intervention*, is dedicated to historical research into the complex themes of surveying and the various forms of representation of architecture, in-depth analysis of the chemical-physical degradation of buildings, and the illustration of the diagnostic activities of the built, static analysis applied to historic buildings, with the last section being dedicated to the restoration project. The second course, subtitled *Design Parameters*, explored aspects of greater integration with the different disciplines, particularly investigating the themes connected to estimation techniques for the evaluation of economic resources and the repurposing of the architectural heritage, design and intervention.

¹ Giuseppe Martino, Marina Bonfigli, *Poesia e Prassi del progetto*, in Giuseppe Martino di Giuda, Roberto Dulio, Fabio Marino (eds.), *Andrea Bruno. Opere e progetti*, Electa, Milano 2023, p. 8 (translation by the author).

² I have borrowed the title of Paolo Napoli's contribution from the same issue of the magazine.

3 Maria Grazia Cerri, *Obiettivi e contenuti dei corsi*, in Carla Bartolozzi, Maria Grazia Cerri (eds.), *Il restauro architettonico per le grandi fabbriche*, Celid, Torino 1989, p. 15 (translation by the author).

4 *Ibid.*, p. 15.

5 Carla Bartolozzi, Francesco Novelli, *Dalla dismissione alla valorizzazione: progetti e interventi per il Forte di Exilles (TO) negli anni 1978-2018*, in Anna Marotta, Roberta Spallone (eds.), *Defensive Architecture of the Mediterranean*, Vol. IX, Politecnico di Torino, Torino 2018, p. 951.

6 Maria Grazia Cerri, *Architetture tra storia e progetto*, in Maria Grazia Cerri, *Architetture tra storia e progetto. Interventi di recupero in Piemonte. 1972-1985*, Allemandi, Torino 1985, p. 24 (translation by the author).

7 Luigi Rivalta, *Introduzione*, in *Ibid.*, p. 11.

The idea for the organization of the advanced training activities arises, as is well highlighted by Cerri, from the awareness that the didactic organization at the Faculty of Architecture is not sufficient

«[...] to cover the vastness of the thematic area which, given also the small number of teachers in relation to the exorbitant number of students to be taught, can hardly be covered thoroughly during the university studies [...]»³.

In the goals and contents of the courses, Cerri highlights how the proposed activities were to prioritise

[...] a didactic approach aimed at welding the scope of historical-critical knowledge to the concrete, technical-scientific aspects of the restoration operation. The implementation of this approach is resolved with a methodology that does not deviate from the norm, which is to show the students the stages of the preliminary cognitive process to help them find the solution to the many problems posed by the theme, with a critical awareness acquired from readings, lectures and the direct investigation of the built heritage [...]»⁴.

However, other reasons justify the interest in resuming and focusing on restoring and repurposing the Grandi Fabbriche. Since the establishment of the Regions in 1970, a significant heritage of Piedmont's architectural assets has been in a state of abandonment and is still waiting for a new identity. Royal residences, castles, palaces, fortresses, convents, former hospitals and hospices, which immediately presented themselves to the newly established Piedmont Region as a great opportunity both for the consolidation of the Piedmontese identity and as a driver of economic development, identifying the recovery and development of the heritage as a strategic axis on which to design a central line for the decades to come⁵. Again, Cerri, in 1985, wrote,

[...] Public intervention in the functional restoration sector, often and incorrectly classified as secondary to other needs, undoubtedly represents an economic investment as well as a historical duty. A driving investment around which tourist, cultural and commercial opportunities can be created, increasingly requested, and, in the past, sometimes offered approximately and spontaneously [...]»⁶.

In particular, the orientation pursued by the Piedmont Region

[...] aimed at the reuse and recovery of the existing heritage, is the result of more than one motivation: to reverse that trend, established and largely intensified in recent decades, which has seen public and private operators pay little or no attention to the correct use and reuse of existing building and urban heritage, generally leaning instead towards the construction of new buildings and new appendages of the city fabric [...]»⁷.

Confirming this political will, many of these assets became the headquarters of the same Regional Offices in Turin as the provincial offices. A significant number of assets were destined for cultural use, making Piedmont a center of innovation also from a museum perspective within the space of just a few years. In Turin, the recovery of Palazzo Lascaris, the seat of the Regional Council, was completed, as were the former San Giovanni Hospital and the Museum of Natural Sciences, with the inauguration of the first Italian public Museum of Contemporary Art at the Castello di Rivoli in 1985. In this cultural and political context of great ferment and opportunity for intervention, it is, therefore, necessary to offer architects and engineers enrolled in teaching activities adequate tools to operate on historical buildings, as emphasized by Carla Bartolozzi in the presentation of the Proceedings of the Specialization Courses, but also to provide «[...] a useful tool to all those who are not

yet architects: the students of our Faculties who are often lost in the vastness of a subject like restoration, which is so hard to condense into a manual [...]»⁸.

A final significant aspect of the cultural value of these training activities coordinated by Andrea Bruno is undoubtedly to be noted in the extensive participation as speakers in the course of figures of great importance in the national and international debate on cultural heritage, such as Massimo Carmassi, Vera Comoli Mandracci, Vittorio Defabiani, Roberto Gabetti, Jukka Jokilehto, Paolo Marconi, Giulio Mondini, Vittorio Nascè, Luciano Re, Giuseppe Rocchi, Riccardo Roscelli and Anna Maria Zorgno.

2. Systematization of a methodological process for the design of the restoration project between teaching and professional practice

One of the perspectives on which Carla Bartolozzi's activity is articulated and which, as already mentioned, permeates the teaching activity, applied research and the freelance profession, without distinction, concerns precisely the study and development of a method to systematize the design process aimed at the drafting of the restoration project. Taking up the thought of Giovanni Carbonara⁹, Carla Bartolozzi shares his arguments, especially with regard to "doing restoration"¹⁰, i.e., actually testing one's skills with the construction site. In the same years in which Carbonara published *Avvicinamento al restauro*, at the Politecnico di Torino, Mario Dalla Costa was working on a methodological synthesis for the structured restoration project in

[...] "Knowledge", "restoration" and "repurposing" are therefore the phases of a process, in which the interpretation of the architectural and environmental asset, in its values of history, form and language, content and materiality, is identified with the moments of study and analysis of the connections that define the built heritage, in all its consistency, in the prediction of an intervention which, thanks to restoration and repurposing, enhances it, contributing to its conservation [...]»¹¹.

How, then, can we verify the validity of a theoretical and methodological system aimed at drafting the restoration project?

In her monographic contribution, *Conservation and Restoration Projects and Experiences*, Carla Bartolozzi points out how

[...] The central purpose of the project for the conservation site is to pursue quality in both phases that characterize it: both at the moment linked to knowledge and in the subsequent phase that includes the identification of the interventions to be implemented to reach the final conservation goal. Therefore, the two characterizing moments of the knowledge project, the first and the subsequent conservation project, must be set up and developed with procedures that follow quality standards in the different areas of investigation involved in the research and analysis and make use of the methodological systematizations recognized for the respective areas [...]»¹².

«[...] The project – from the building reduced to a state of ruin to the large works that interact at an urban level as far as the theme of the landscape – must fully respect the adherence to a method that applies even to the most modest of interventions [...]»¹³.

If today we can consider this methodological structure fully acquired, the same cannot be said for all the prescriptions that constitute the second part of the project, relating to the executive phase. The project validation procedures in the field of Public Works (in Italy) for complex projects, including large restoration sites, verify aspects of congruity

⁸ Carla Bartolozzi, *Dal programma dei Corsi alla redazione degli Atti*, in Bartolozzi, Cerri, *Il restauro architettonico* cit., p. 20 (translation by the author).

⁹ Carbonara is considered a *trait d'union* that has brought academic culture closer to the culture of operations, to reach the construction site. See Giovanni Carbonara, *Introduzione. Natura e compiti del restauro*, in Giovanni Carbonara, *Avvicinamento al Restauro. Teoria, storia, monumenti*, Liguori Editore, Napoli 1997, pages 5-20.

¹⁰ Carla Bartolozzi, *Dal progetto di restauro alla realizzazione dell'intervento*, in Carla Bartolozzi, *Progetti ed esperienze di conservazione e restauro*, Celid, Torino 2008, p. 9.

¹¹ Mario Dalla Costa, *Il progetto di restauro per la conservazione del costruito. Lo schema metodologico*, in Mario Dalla Costa (eds.), *Il progetto di restauro per la conservazione del costruito*, Celid, Torino 2000, p. 21 (translation by the author).

¹² Bartolozzi, *Dal progetto di restauro* cit., p. 10. Recent results of the debate on the quality of the restoration project in SIRA (Italian Society for the Restoration of Architecture), <https://sira-restauroarchitettonico.it/iii-convegno-sira-restauro-dellarchitettura-per-un-progetto-di-qualita-napoli-15-16-giugno-2023-call-for-abstracts> (last consultation August 2024). *Restauro dell'architettura. Per un progetto di qualità*, Coordinamento di Stefano Della Torre e Valentina Russo, *Apparati e Documento di indirizzo per la qualità dei progetti di restauro dell'architettura*, III Convegno della SIRA Società Italiana per il Restauro dell'Architettura "Restauro dell'architettura. Per un progetto di qualità", Napoli, 15-16 June 2023, Quasar, Roma 2023. See also Daniele Dabbene, Carla Bartolozzi, Cristina Coscia, *Evaluating the Quality of Architectural Heritage Reuse Projects Using a Well-Being and NEB Approach: The Case Study of IPIM in Turin (Italy)*, in «Heritage», n. 7.6, 2024, pages 2834-2865.

¹³ Bartolozzi, *Dal progetto di restauro* cit., p. 11.

14 Maria Grazia Cerri, *Palazzo Carignano: tre secoli di idee, progetti e realizzazioni*, Allemandi, Torino 1990, p. 9 (translation by the author).

15 The professional experiences are ascribed to the activity carried out from 1999 to 2019 as a founding member of Tetrastudio architects associated with Luisa Giacomelli, Francesco Novelli, and Maurizio Reggi.

and correspondence between the different documents that make up the project as a whole. Still, they are not tools for quality control understood as a coherent project outcome with the initial methodological premise. On the subject, Carla Bartolozzi, highlights how the phase of the design expressions relating to the dimension of the choice of the intervention is to be considered unique and unrepeatable, differing from case to case.

Therefore, restoring complex buildings requires the integration of technical, historical, artistic and social skills. The conservation of these buildings is about preserving the physical structure and maintaining their cultural and historical value, integrating these spaces into the contemporary urban context and significantly impacting the social and economic fabric of cities. These interventions can stimulate urban regeneration, create new job opportunities and improve the quality of life in the surrounding areas. Redeveloping these spaces can attract investments and tourists, and contribute to local economic growth. Furthermore, the balance between conservation and innovation is a crucial underlining aspect. While preserving the historical integrity of the building is essential, it is equally important to adapt it to contemporary needs. Cerri's considerations in the introduction to the volume on the restoration of Palazzo Carignano in Turin, in which she emphasizes how the new functions must adapt to the structure of the building, which history has delivered to us in a state of equilibrium, remain valid even today.

[...] In reality, the continuity of the time that passes between the construction of architecture and the moment in which it is considered cannot exempt us from also evaluating the intermediate pauses during which changes that are not perceived in the evidence and objectivity of the "project" but still have their dynamic, slowed down but inevitable, occur. [...] the micro transformations that the building undergoes with the continuity of use, with the overlapping of stylistic languages, with maintenance interventions and, conversely, with the lack of maintenance. [...] if there is a change of use, the interventions become more marked and [...] often the forced introduction of inadequate functions leads to alterations that seriously undermine the structure of the buildings [...]¹⁴.

To give substance and tangibility to a structured path with a defined methodological framework, a direct (not exhaustive) reference to some professional and educational experiences taken from Carla Bartolozzi's¹⁵ was considered essential. This was organized according to the following specific themes, to which experiences of "good practice" are associated:

- graphic representation for the restoration project;
- "occasional restoration": restoration of complex works for exceptional events;
- accessibility for Grandi Fabbriche;
- minimal design as an expression of didactic experimentation.

2.1. Graphic representation for the restoration project

The topic of a correct representation of the historical building, within a methodological process structured in phases, as an essential basis for drafting the restoration project is one of the subjects that have most engaged Carla Bartolozzi in her teaching. The process of synthesis of the state of the art, used by Carla Bartolozzi has since the end of the 1980s, starts from the examination of the positions of Marco Dezzi Bardeschi, Salvatore Boscarino, Mario Dalla Costa and Paolo Fancelli,

Giovanni Carbonara and Paolo Marconi. Moving from a theoretical comparison to a methodological one and, therefore, the systematization of a precise procedure, the first differences emerge, starting from the name of “preservation project” or “conservation project”. The differences, which are often quite marked, characterize the methodological system of the various authors, to whom we owe a wide range of experiments often referred to by the author in her writings on the subject, underlining how much we owe to these steps for the development of new and more effective representation techniques. At the beginning of the 1990s, Mario Dalla Costa and his group of researchers, gave this aspect of research

[...] a decisive impulse, characterized as the most interested in highlighting the state of degradation and the collapse of a building. First of all, he insists on the need to graph the state of collapse, and at the same time, in recognizing each phenomenon, he sees its immediate dimensioning as fundamental. If an element of degradation is recognized, its causes identified, cataloged and quantified, one can immediately move on to the operational phase, making the specific interventions correspond to each phenomenon found [...]16.

The method has favored constant evolution, with an inevitable expansion of the initially prepared “graphic archive”, an operation favored by computer processing, also allowing the connection of different information to the data, including the exact economic quantification. The connection between the theoretical and more operational aspects of the construction phase emerges immediately, taking these applications from a predominantly academic context to the consensus of the Soprintendenze and to an increasingly widespread professional use. Carla Bartolozzi has dedicated over twenty years of activity to the evolution of the so-called “Dalla Costa method”, between experimentation in the academic field, in scientific consultancy provided to public institutions and professional operators, and in professional assignments. The flexibility of the method allows the communication of a large amount of data relating to the architectural object, be it a small monument, a monumental building or an ordinary building, synthesized in a table of information that would otherwise require more complex developments. Some significant design experiences and responses to the previously mentioned categories have been identified as evidence of this path (Figures 1, 2).

16 Carla Bartolozzi, Mario Dalla Costa, *The didactics of architectural restoration: a method of teaching how to plan conservation*, in «STOA» n. 2, 1997, pages 64-74. Carla Bartolozzi, *Lo stato dell'arte: verso un segno convenzionale*, in Dalla Costa, *Il progetto di restauro cit.*, p. 130. Carla Bartolozzi, *Metodo e intervento: i restauri di Palazzo Borelli a Demonte*, in *De Venustate et Firmitate. Scritti in onore di Mario Dalla Costa*, Celid, Torino 2002, pages 263-278.



Fig. 1 – Abbey of Santa Maria of Lucedio in Trino (VC), before the restoration works (2005).



Fig. 2 – Detailed survey of the north front of the church of Santa Maria of Lucedio and the bell tower with the key of the graphic symbology (original drawing scale 1:50, 2006).

	Muratura in mattoni (prevalente)		Tamponamenti in blocchi di calcestruzzo
	Muratura in mattoni (secondaria)		Tamponamenti in laterizi a nido d'ape
	Elementi difforni (in laterizio)		Mattoni con andamento ipotizzato (per alta presenza di rinforzo o scialbo)
	Tracce di intonaco		Archi e piattabande in mattoni
	Tracce di rinforzo / scialbo		Andamento frastagliato dello spigolo fratture
	Tamponamenti in laterizio		* Non oggetto di intervento

17 Francesco Novelli, *Note per la conservazione e la valorizzazione delle architetture fortificate*, in Micaela Viglino Davico, Andrea Bruno jr., Enrico Lusso, Gian Giorgio Massara, Francesco Novelli (eds.), *Atlante Castellano. Strutture fortificate della Provincia di Torino*, Celid, Torino 2007, pages 359-382. Bartolozzi, *Progetti ed esperienze cit.*, pages 58-70.

18 *Progetto di restauro della torre delfinale*, anni: 2004-2007, Customer: Comune di Oulx (TO), Project and works supervision: Carla Bartolozzi – Francesco Novelli, *Tetrastudio architects associated*.

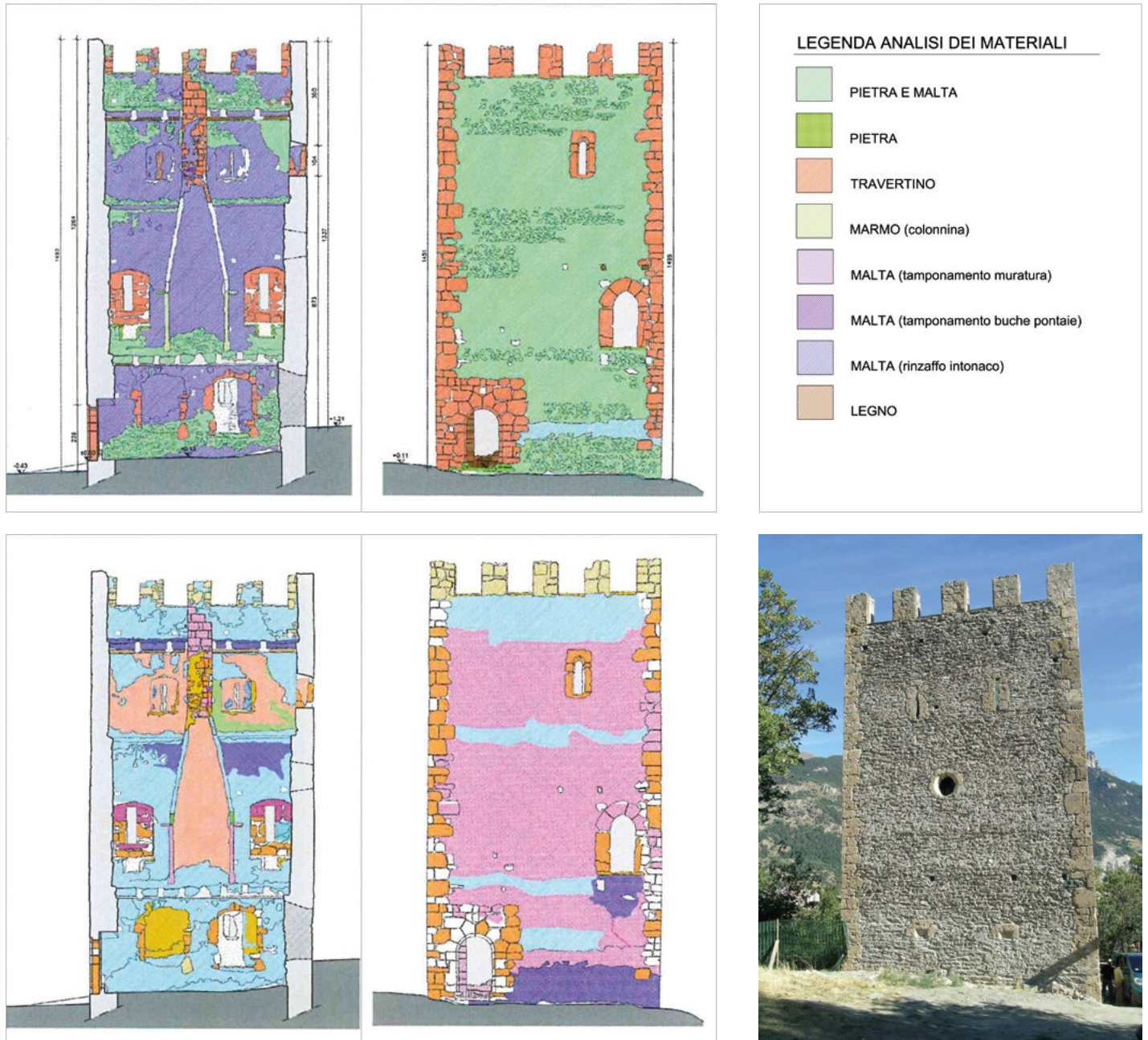
The first concerns a small fortified building, a completely abandoned tower, in the Municipality of Oulx (TO)¹⁷, the restoration and repurposing of which envisaged its reuse for cultural purposes. The planned interventions (2004-2007)¹⁸ were focused on restoring accessibility (the building had no horizontal elements or vertical connections) with the addition of a staircase and new floors, the restoration of the interior and exterior surfaces, and the creation of a roof and new windows. The graphic project identifies the materials and documents the state of the defects. The restoration interventions already present a further development concerning the method systematized by Dalla Costa, fully exploiting the potential of computer processing:

the use of color, the inclusion of photographs for greater clarity and completion of the text and the technical drawing. The architectural survey of the building faithfully (and not allusively) restores the material consistency of the property, the detail of which is related to the reference graphic scale (1:50); this allows the inclusion of the design proposal characterized by minimal intervention with minimal visibility (Figures 3, 4, 5).

Fig. 3 – Section-elevation and prospect, analysis of materials and extract of the key (original drawings at 1:50 scale, 2006).

Fig. 4 – Section-elevation and prospect, analysis of degradation and planned interventions with extract of the key (original drawings at 1:50 scale, 2006).

Fig. 5 – The “delfinale” tower, south side, after restoration (2007).



INTERVENTI PREVISTI

Su tutte le superfici murarie e sugli elementi costituenti la torre sono previste una pulitura generale e la stesura di un film protettivo traspirante. Ogni tipologia di degrado verrà inoltre trattata nello specifico con i seguenti interventi.

MURATURA PORTANTE IN PIETRA			
<p>DEGRADO: Presenza di alveolizzazione e disgregazione sulla muratura dei merli</p> <p>INTERVENTO: Rimozione di sali mediante applicazione di compresse imbevute di soluzioni di sali inorganici, carbonato o bicarbonato di ammonio e successiva rimozione meccanica dei depositi solubilizzati mediante pennellesse, spazzole, bisturi. Verifica della stabilità della struttura ed eventuale integrazione degli elementi lapidei eccessivamente degradati e incoerenti. Pulitura delle lastre lapidee disposte a protezione della sommità della muratura e dei merli. Eventuale stesura di strato di malta di calce o cocciopesto ove le lastre lapidee siano assenti. Applicazione di consolidante protettivo non filmogeno.</p>	<p>DEGRADO: Patina biologica ed erosione</p> <p>INTERVENTO: Disinfezione da colonie di microrganismi autotrofi o/e eterotrofi mediante applicazione di biocidi e successiva rimozione meccanica, su superfici esterne ed interne. Eventuale rimpiazzo di elementi lapidei mancanti ove necessario. Risanamento dei paramenti lapidei con una ripresa di consolidante protettivo non filmogeno.</p>	<p>DEGRADO: Disgregazione ed erosione degli elementi costituenti la muratura e della malta di allettamento</p> <p>INTERVENTO: Rimpiazzo di eventuali elementi lapidei mancanti e sostituzione di quelli gravemente corrotti. Risanamento dei paramenti lapidei, eseguito su superfici preventivamente pulite, con una ripresa di consolidante protettivo non filmogeno. Scarificazione dei giunti delle malte non più compatte, stesura con malta adeguata degli stessi giunti scarificati e di quelli privi di malta previa accurata pulizia degli interstizi con spazzole di acciaio e saggina.</p>	<p>DEGRADO: Macchie e imbrattamenti sul paramento murario</p> <p>INTERVENTO: Rimozione di macchie solubili mediante pulitura manuale con spazzole di saggina ed eventualmente acqua reutilizzata a bassa pressione, a seguito di una preventiva analisi dello stato di conservazione e delle caratteristiche materiche del manufatto, al fine di evitarne un ulteriore deterioramento.</p>

19 The Spanish Castle of L'Aquila is one of the grandest and best-preserved creations of modern military architecture on European soil. Built between 1534 and 1567 at the behest of Emperor Charles V of Habsburg by the Spanish architect Pyrro Luis Escrivá, for centuries it was one of the cornerstones of the defensive system of the Kingdom of Naples. The fortress, set on an innovative square plan with mighty corner bastions, connected to the curtain walls by pairs of semi-cylindrical trunnions, was taken as a model by military engineers for defensive works built across a vast area, from Tunisia to Flanders, from Germany to the Spanish colonies in America.

20 The executive project for the construction of Excerpt 1 – *Consolidation and restoration works of the sixteenth-century castle in L'Aquila*, was delivered in December 2016 and completed at the beginning of 2024. The temporary grouping of professionals was the following: AiStudio (group leader), prof. Carla Bartolozzi – *Tetrastudio architects associated* (coordination of architectural and restoration design), arch. Paolo Rocchi (structural and consolidation works), *Studio Menichelli* (structural analyses), *DEERNS ITALIA S.p.a.* (systems and safety projects).

21 Carla Bartolozzi, *Il Palazzo a vela e i Padiglioni delle Regioni nell'area di Italia 61. Processi decisionali, progetti e trasformazioni in occasione dei Giochi Olimpici Invernali di Torino 2006*, in Guido Montanari (ed.), *Italia 61 a Torino. Una modernità tradita*, SPABA, Torino 2023, pages 69-90. Carla Bartolozzi, *Cosa perdiamo quando gli edifici non sono tutelati. Il riuso del Palavela e dei Padiglioni delle Regioni in occasione dei Giochi Olimpici Invernali di Torino del 2006*, in Gentucca Canella, Paolo Mellano (eds.), *Il diritto alla tutela, Architettura d'autore del secondo Novecento*, FrancoAngeli, Milano 2019, pages 28-43.

22 Carla Bartolozzi, Francesco Novelli, *Ex pettinature riunite Rivetti di Giuseppe Pagano a Biella: esigenze di tutela Vs esigenze di progetto*, 2024 (in printing).

23 Scientific consultancy for the Restoration project of the *Former Pettinature Rivetti in Biella*; Scientific referents: prof. Carla Bartolozzi, prof. Francesco Novelli, Department of Architecture and Design (DAD), Polytechnic of Turin. Client: Studio Architettura & Design, Associated Studio of Architecture and Interior Design, Romagnano Sesia (NO). Years: 1st consultancy, 2019-2021; 2nd consultancy, 2021-2024.

24 There is an extensive bibliography on the subject, in particular see Antonio Giovanni Mazzeri, *Il restauro d'occasione: il piano degli interventi di interesse nazionale fuori del Lazio in occasione del Giubileo del 2000. Un modello di finanziamento speciale a scala nazionale e la tutela dei beni culturali*, PhD thesis in Restoration, Politecnico di Torino, XV cycle (2004), tutor Maria Adriana Giusti.

The proof of the goodness and flexibility of the method is applied to very different buildings and contexts. The intervention for Consolidation and Restoration works of the sixteenth-century Castle in L'Aquila represents another significant example of its complexity and historical and architectural value¹⁹.

The castle, once the historic seat of the Soprintendenza of Archaeology, Fine Arts and Landscape for the Provinces of L'Aquila and Teramo, and of the National Museum of Abruzzo, is now temporarily closed due to the reconstruction and restoration work that became necessary after the 2009 earthquake. As already mentioned, the intervention is highly complex not only due to the size and structure of the structure but also the number of restoration interventions and adaptations to the new functions envisaged by the project currently underway, with the addition of interventions to restore and secure the statics of the building following the earthquake. Here, it is important to highlight how the methodological approach to graphic representation in the drafting of the restoration project²⁰ has maintained its flexibility of application, while contemplating modifications, additions and formal adjustments, also confirming its potential with regard to a significant change in scale of the architectural complex studied (Figures 6, 7).

The method's versatility can also be found in cases where we consider a heritage the value of which is still not fully recognized, making its protection more complex. Architecture belonging to the significant heritage of contemporary architecture has been the subject of an essential and far-reaching debate on the right to conserve the authorship of the asset for years. Carla Bartolozzi studied the controversial works of transformation of Palazzo a Vela in Turin during the 2006 Winter Olympics Games²¹. Subsequently, she became interested in investigating the relationship between sustainability and conservation of the large heritage of industrial archaeology and the transformations of the city of Turin. The third example refers to this last theme: the former Pettinature Rivetti industrial complex in Biella, the work of the architect Giuseppe Pagano²². The experience was born as a scientific consultancy²³ for the restoration and repurposing of the Biella complex, highlighting the strategic role that Universities can play in the sustainable reuse of large factories, orienting the overall interventions towards restoration and repurposing choices that are also compatible with the conservation of the collective memory that these assets hold. The documents produced highlight the care and attention to the built environment without any selection or judgment in terms of value, but intending to detect and document the state-of-the-art to subsequently move on to the drafting of design documents that respond, on the one hand, to the requests of the competent Soprintendenze, and, on the other, to a compelling and clear reading in the broader framework that makes up the final documentation of the executive project, the development of which is functional to the construction phase. (Figures 8, 9).

2.2. “Occasional restoration”

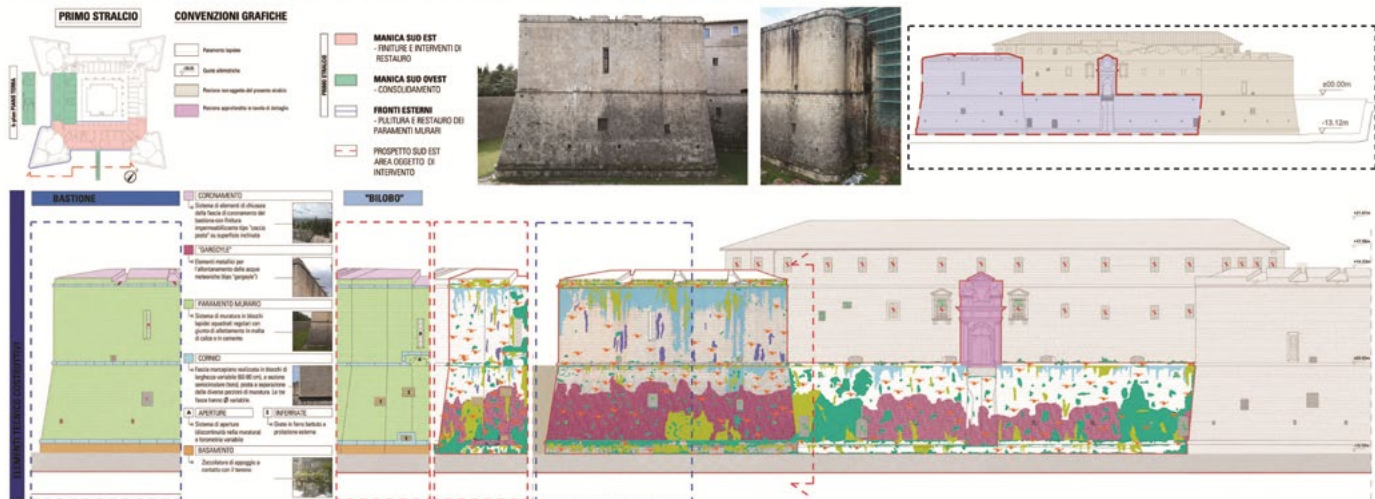
The “occasional restoration”, intended as an intervention carried out in view of exceptional events, has a long tradition but a recent title. In considering the city of Turin as a significant example, we can recall the restoration initiatives implemented in 1961 to celebrate the centenary of the Unification of Italy²⁴. Works that involved restoration and extraordinary maintenance interventions on the main monuments of Turin,

On the next page:

Fig. 6 – Castle in L'Aquila, executive project, excerpt I, south-east prospect, analysis of the state of defects and interventions (original drawings on a scale of 1:100, 2016).

Fig. 7 – Castle in L'Aquila, specialist restoration, wooden coffers and entrance portal (original drawings on a scale of 1:50, 2016).

PROGETTO ESECUTIVO, STRALCIO_I_PROSPETTO SUD-EST_ANALISI DELLO STATO DEI DIFETTI E INTERVENTI



FENOMENI ESTESI A TUTTA LA SUPERFICIE		FENOMENI PUNTUALI	
DEGRADO IDENTIFICATO	INTERVENTO	DEGRADO IDENTIFICATO	INTERVENTO
DEPOSITI SUPERFICIALI	Rimozione di depositi superficiali incoerenti, ingombranti e/o nocivi, con pulitura meccanica, idraulica e chimica, a seconda del tipo di deposito.	SBERCIATURA	Ritoccatura delle zone mediane trasversali per ripristinare l'aspetto originale, con tinture compatibili con il tipo di supporto.
DELAZAMENTO	Verifica delle cause del delazamento e, in caso di necessità, interventi di consolidamento e ripristino della struttura portante.	ALTERAZIONE CROMATICA	Adozione di pitture compatibili con il supporto e con l'ambiente circostante, rispettando le norme vigenti.
PERFORAZIONI INDEBITATE SUPERFICIALI E INTERIORI	Pressatura di tinte e macchiature con prodotti idonei, con successivo trattamento di consolidamento e protezione.	CROGHI MISTI	Rimozione di depositi superficiali e di tinte, con successivo trattamento di consolidamento e protezione.

IL RESTAURO SPECIALISTICO_CASSETTONI LIGNEI E PORTALE DI INGRESSO

1 SOTTITO LIGNEO DIPINTO SE, PT, SE, scala 1:50

ELEMENTI TECNICO COSTRUTTIVI	STATO DEI DIFETTI
CORNICI LIGNEE	Presenza di fori da insetti, abrasioni e graffi, sfaldamenti superficiali, depositi superficiali.
TAVOLE LIGNEE DIPINTE	Sfaldamenti, macchie di umidità, sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.
MEDAGLIONI DECORATIVI	Sfaldamenti, macchie di umidità, sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.

2 SOTTITO LIGNEO DIPINTO SE, PT, SE, scala 1:50

ELEMENTI TECNICO COSTRUTTIVI	STATO DEI DIFETTI
CORNICI LIGNEE	Presenza di fori da insetti, abrasioni e graffi, sfaldamenti superficiali, depositi superficiali.
TAVOLE LIGNEE DIPINTE	Sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.
MEDAGLIONI DECORATIVI	Tavole di legno presentanti sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.



PORTALE MONUMENTALE DI INGRESSO AL CASTELLO, scala 1:50

INTERVENTI DI RESTAURO DIFFUSI
Rescue of elements and choice of color and texture
Restoration of elements damaged by water
Restoration of elements damaged by insects
Restoration of elements damaged by mold
Restoration of elements damaged by fire
Restoration of elements damaged by pollution
Restoration of elements damaged by weathering
Restoration of elements damaged by mechanical wear
Restoration of elements damaged by aging
Restoration of elements damaged by environmental factors

ELEMENTI TECNICO COSTRUTTIVI	STATO DEI DIFETTI
FRESCHE	Presenza di lesioni superficiali, abrasioni e graffi, sfaldamenti superficiali, depositi superficiali.
TRAVERTINI	Sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.
PORTINE	Abrasioni e graffi, sfaldamenti superficiali di colore bianco e scolorimenti cromatici, lesioni superficiali.



Fig. 8 - The former Pettinature Rivetti in Biella (BI), sections - interior elevation, material survey and analysis of the state of conservation (original drawings on a scale of 1:50, 2021).

Fig. 9 - The former Pettinature Rivetti in Biella (BI), prospect and sections - elevation, analysis of the state of conservation and identification of restoration interventions (original drawings on a scale of 1:50, 2021).

25 For the project and implementation see the two contributions respectively: *Villaggio Media Riberi*, in Marco Filippi, Franco Mellano (eds.), *Agenzia per lo svolgimento dei XX giochi olimpici invernali. Torino 2006. 1_Progetti*, Electa, Milano 2004, pages 271-285; *Villaggio Media Riberi*, in Marco Filippi, Franco Mellano (eds.), *Agenzia per lo svolgimento dei XX giochi olimpici invernali. Torino 2006. 2_Cantieri e Opere*, Electa, Milano 2006, pages 204-211. The temporary group of design professionals made up of prof. arch. Carlo Aymonino (team leader), *Base Engineering s.r.l.*, *Sintecna s.r.l.*, *EL s.r.l.*, *Engineering s.r.l.*, arch. Loredana Dionigio, arch. Maria Pia Orsini, *Studio Pession Associato*, prof. arch. Carla Bartolozzi (*Tetrastudio architects associated*), *Golder Associates s.r.l.*, ing. Giancarlo Gonnet. For the Direction of Works Carla Bartolozzi (*Tetrastudio architects associated*), covered the role of operations director for pavilions H-I-J.

26 *Villaggio atleti Colonia Medall*, in Filippi, Mellano (eds.), *Agenzia per lo svolgimento dei XX giochi olimpici invernali. Torino 2006 cit.*, Electa, Milano 2004, pages 239-253. The temporary group of design professionals made up of prof. ing. Paolo Napoli, ing. Consuelo Orza (*Sintecna s.r.l.*, team leader), *Base Engineering s.r.l.*, arch. Loredana Dionigio, arch. Maria Pia Orsini, *Studio Pession Associato*, prof. arch. Carla Bartolozzi (*Tetrastudio architects associated*), *EL s.r.l.*, *Metec s.r.l.*, *Impro s.r.l.*, *Golder Associates s.r.l.*, *Studio Abacus s.a.s.*

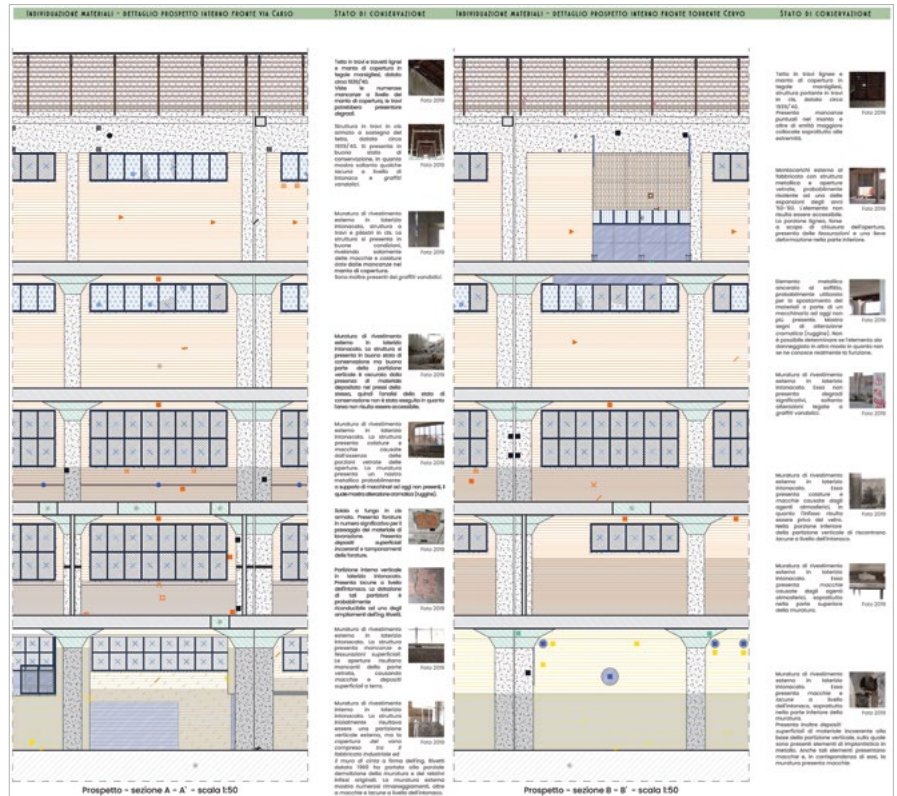


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including the Castello del Valentino, Palazzo Reale, etc. We can then recall interventions carried out on the occasion of the various Exhibitions of the Holy Shroud and the Jubilee, not forgetting the 2006 Winter Olympic Games. The two further examples of restoration and repurposing presented refer precisely to this specific occasion: the complex of the former *A. Riberi* military hospital in Turin²⁵ and the *Colonia IX maggio* in Bardonecchia (TO)²⁶. Both buildings were identified as functional sites for the 2006 Winter Olympic Games: the first, intended as a media

village, is the former *A. Riberi*, military hospital, of such architectural scale as to require consideration as an intervention on an urban scale; the second, the Medail Olympic Village, formerly *Colonia IX maggio*, was intended to host athletes competing in the snowboarding, skeleton, freestyle, and luge events.

The *A. Riberi* hospital is a large complex with a single closed structure, built in 1910-1920 in the southwest of Turin. The hospital structure has always consisted of a group of distinct buildings, including the military command and residential activities, specifically the hospital and a small church. The entire area of the military complex is subject to constraints by the Soprintendenza, which is why the design approach was based on a shared principle, respecting the original pre-existing concept to enhance the existing structure. An aspect of innovation required for the project was the recovery of all the basement floors. This required excavation work at the base of some buildings, providing the opportunity to recover the formal value of the garden before the intervention, which was strongly distorted by poor and careless maintenance. The development of the final project was substantially inspired by the original planimetric settings, combining the need for a functional adaptation of the interior routes to the area of the former Riberi Hospital with the conservation of the historicized green environment. The project for the construction of the media village adhered to the principle of minimum intervention and, when possible, operated in the name of possible reversibility, in addition to maintaining the volumetric composition of the buildings and openings and preserving the original windows and stairwells (Figures 10, 11, 12).

The *Colonia IX maggio* building complex was built in the 1930s, based on a design by Gino Levi Montalcini with Paolo Ceresa. It is inspired by rationalist architecture (1937-399) but was already built when the regime was in full economic crisis: low-cost architecture based on the expressiveness and composition of form. Its new function as an Olympic Athletes' Village made it possible to adapt the new needs to a structure already prepared for such functions. The design approach was therefore developed within the context of preserving the existing structure, recovering a situation of degradation that brought the

Fig. 10 – Former Riberi Hospital in Turin, pavilion with view of the glass gallery, before the restoration and modelling of the terrain (2004).

Fig. 11 – Former Riberi Hospital in Turin, pavilion with view of the glass gallery, after the restoration and modelling of the terrain (2006).



Fig. 12 – Former Riberi Hospital in Turin, the glass gallery and the central garden, after the restoration (2006)



buildings to a serious state of compromise while creating a new design integration to fulfill the functions required by the international event. The original project for the colony included the construction of a pavilion for the Young Fascists and one for the Balilla, a pavilion for the infirmary, and two entrance pavilions. Lastly, a tower stands out at the centre of the composition on the main front.

When the colony was no longer used, the complex went through long periods of abandonment and adaptation works carried out over the years paid little attention to the value of the original architecture. These interventions were never completed but irreversibly changed the architectural layout.

The set of buildings of the former colony is subject to protection constraints, pursuant to Legislative Decree no. 42 of 22 January 2004 and, therefore, to the request for authorization for the construction of the works by the competent Soprintendenze. Bearing this in mind, the project implemented pursued an intervention that resumed the idea behind Levi Montalcini's creation as much as possible. The verification of historical documentary data of an extensive photographic campaign made it possible – where not compromised – to resume a compositional language that was in agreement with the original work. The end result produced a new plan for the area, repurposing the historic buildings and adding new ones²⁷. For the exterior elevations in particular, efforts were made to find the original colors, still visible in some uncompromised points, to update and re-propose them, as for the tower, which recovers the original function of focal and symbolic point of the complex (Figures 13, 14).

2.3. Accessibility for Grandi Fabbriche

Accessibility is an integral part, if not the main reason, for works to adapt the historical architectural heritage, especially in the case of architecture for public functions²⁸. Often, the quality of a cultural asset's restoration and repurposing project can be measured by the attention that the project has paid in terms of solutions, formal proposals, and final implementation, for adaptations to overcome architectural barriers. This topic has always had a central role in Carla Bartolozzi's

²⁷ *Villaggio atleti Colonia Medail*, in Filippi, Mellano (eds.), *Agenzia per lo svolgimento dei XX giochi olimpici invernali. Torino 2006*. 2 cit., Electa, Milano 2006, pages 188-195.

²⁸ For a more in-depth analysis of the topic, see the contribution by Caterina Giannattasio in this same collection of essays.



Fig. 13 - The Colonia IX Maggio complex in Bardonecchia (TO) and the alpine context (around 1940).

Fig. 14 - The Colonia IX Maggio complex in Bardonecchia (TO), Aerial view (2006).



activity, intended not as a solution to regulatory problems but rather as a compatible and sustainable design solution within a perimeter of large and complex interventions. Design solutions are always identified after a systematic and in-depth study of the asset concerned, supported by a deep-rooted belief that the intervention should be minimally invasive and show maximum respect for the existing structure in a dialectical relationship with the other disciplinary skills that converge on the theme, from structural to plant engineering. Here, we can recall some interventions, including the restoration and adaptation of Palazzo Borelli in Demonte (1997-2001), the restoration of Palazzo della Provincia in Biella (1997-2003), the adaptation of the historic lift at the castle of Agliè (2006-2007) (Figure 15) and the overcoming of architectural barriers at the Fort of Exilles (2005-2011).

This last case represents a significant example that not only involves aspects of regulatory compliance but also paid attention to a large community of people who, for a long time, were no longer able to visit the Fort due to those characteristics of "inaccessibility" intrinsic to its original defensive function, which, in an updated functional framework and a new perspective of optimization of the asset, was transformed from being an indispensable point of strength into a detractor²⁹. In the objectives of the Regional Council, a defensive structure, closed to attacks, becomes a place of memory, exhibition and narration of its

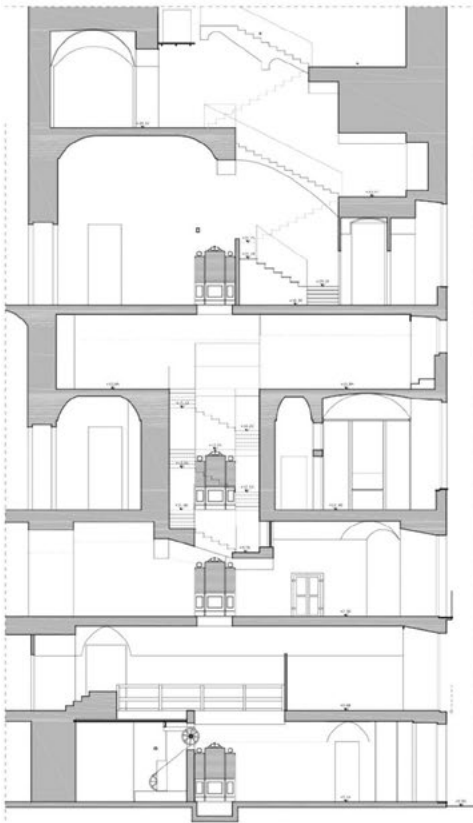


Fig. 15 - The historic lift at the castle of Agliè (original drawings at 1:50 scale, 2006-2007).

On the next page:

Fig. 16 - Fort of Exilles (TO), Restoration works of the 'Cavaliere', sketches and photo insertion for the new elevator group, competition drawings (2005).

Fig. 17, 18, 19 - Fort of Exilles (TO), the new elevator group (2011).

history, and is opened to the visitor, going from being an impregnable Fort to an accessible Fort. Therefore, this project starts breaking down the barrier of inaccessibility by creating a new "cut in the rock" and restoring the first floor of the Cavaliere. The latter, partly intended as a permanent museum and partly as a museum of itself (the southern wing and the Governor's lodging), has been the subject of conservative restoration. The project was carried out to maintain the spaces for a function reminiscent of military life (Figures 16, 17, 18, 19):

[...] The recovery of the individual cells has given the place back its character of simple life, without any more formal references to the military aspects which, in the last phase of the history of the Fort, were almost absent, replaced by that state of useless waiting for the event, as if many Giovanni Drogo from the pen of Dino Buzzati had materialized with their stories in Exilles³⁰.

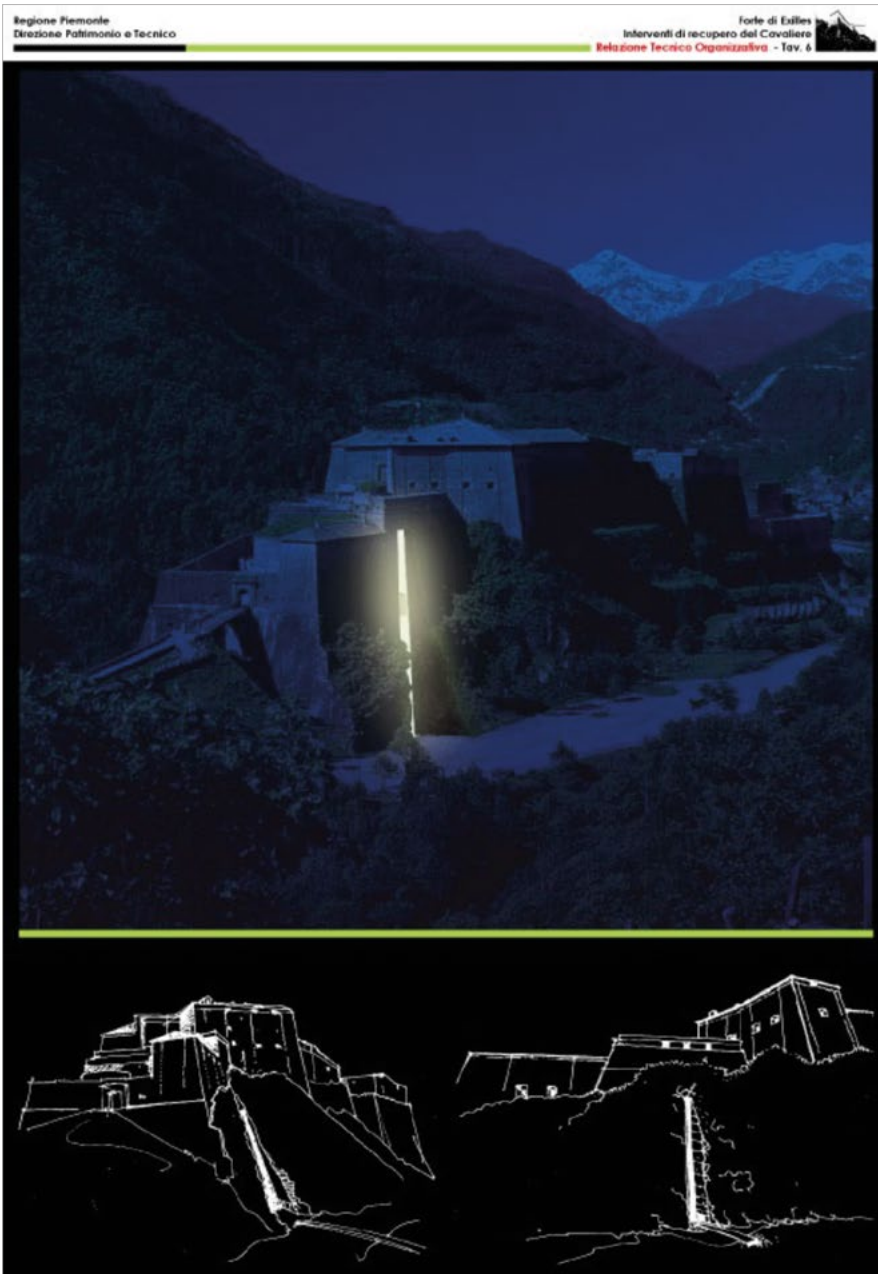
2.4. Minimal design as an expression of didactic experimentation

Carla Bartolozzi's teaching activity has always been characterized by courses, workshops, and restoration ateliers with a solid operational component, in which the drafting of the project is a central moment, as is the sharing and development of the chosen subject with the co-holding disciplines of the course (geomatics, structures, etc.). Carla Bartolozzi, who was the contact person for the *Master's Degree Course in Architecture for the Sustainable Project* for two mandates (from 2012 to 2018), and was the holder for many years of the *Atelier Compatibility and sustainability of architectural restoration*, expresses her thoughts as follows:

[...] In just a few years, the Restoration Ateliers have succeeded in finding their own identity, which is functional to the objectives and specificity of the Degree Course, which focuses on the theme of sustainability, producing results that [...] demonstrate the validity of a teaching

²⁹ The intervention carried out at the Exilles fort also responds to the fundamental assumptions of the *Council of Europe Framework Convention on the value of cultural heritage for society*, Faro 27/10/2005.

³⁰ Bartolozzi, Novelli, *Dalla dismissione alla valorizzazione* cit., p. 951-952.



method of the Restoration project that increasingly targets the needs of the territory. We start from here: the search for a case study located in an area that is in some ways already known and familiar, which offers itself as an example to transmit updated working methods, multidisciplinary skills, attention to the context and dialogue between the imperative of conservation and the needs of enhancement. The restoration project cannot exist without the presupposition of an analytical study that justifies the choices from a perspective of renewal that does not cut off the testimonies of the past. Therefore, it is necessary for the size of the study, or rather the boundary of knowledge, to find a stable point of equilibrium in relation to the purposes and the degree of development of the project. The study must, therefore, focus on the different levels necessary to acquire an adequate awareness of the theme without pursuing an exhaustiveness that would not be consistent with a moment of teaching on the one hand and learning on the other. The process according to which each work and, therefore, each group of students retraces the same stages of knowledge, keeping the context unchanged, is functional to induce growth and an awareness of mastery of methods necessary for any subsequent propositive process. It means measuring oneself with investigations of different nature and scale, sometimes even going beyond the knowledge that is on the margins of one's own experiences through history, and seeking

31 Carla Bartolozzi, *Introduzione*, in Pia Davico, Manuela Mattone (eds.), *Dal rilievo al restauro: interventi di recupero sostenibile a Barone Canavese*, Politecnico di Torino, Torino 2019.

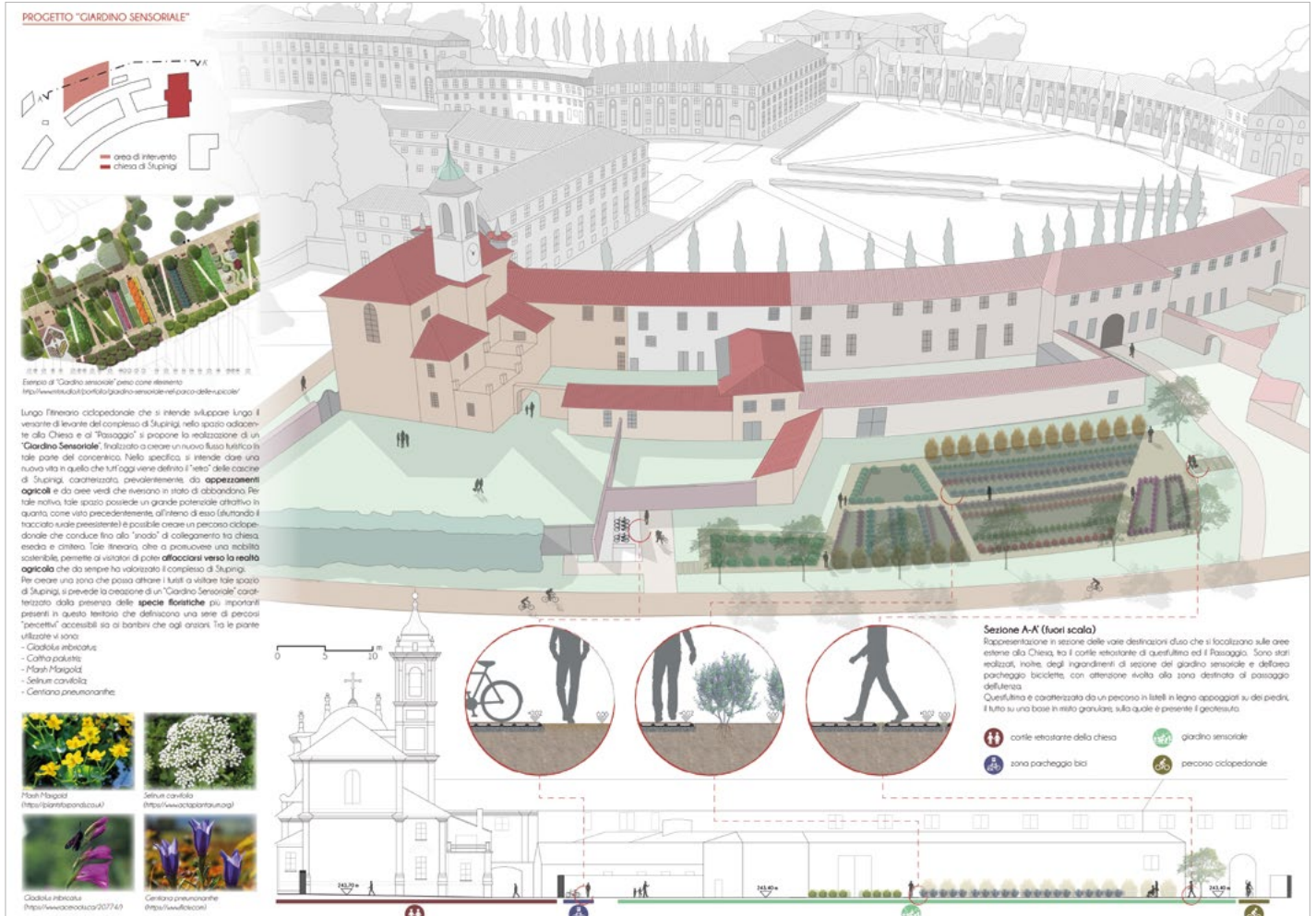
32 The design approach looks at international experiences in which the theme of “counterpreservation” constitutes a sustainable alternative to more complex and costly interventions. See Daniela Sandler, *COUNTEPRESERVATION. Architectural Decay in Berlin since 1989*, Cornell University Press and Cornell University Library Ithaca, New York 2016; Caitlin DeSilvey, *Curated decay. Heritage beyond saving*, University of Minnesota Press, Minneapolis 2017.

Fig. 20 – Eastern exedra of the Stupinigi complex (TO) and church of the Visitation of the Virgin Mary, Project for a sensory garden, integrated restoration and conservation Atelier, Master’s degree course in Architecture for sustainability, students: A. Farina, M. Fissore, C. Patti, academic year 2019-2020).

confirmation in the direct reading of still legible material traces to re-compose the picture of what we call heritage [...]». All this to then proceed towards «[...] the project, as a solution that gives new value and perspective to abandoned places. The visions chosen by the students’ take us back to traditional themes, reinterpreted and projected into the uses of contemporary society. Ancient crafts are not re-proposed with nostalgia or lost lifestyles. Instead, the need not to betray places and history is creatively reaffirmed [...]»³¹.

Recovering the tangible and intangible cultural heritage sedimented in these places, therefore, represents a fundamental opportunity in the regeneration of fragile cultural assets, for which there are often not enough resources for large-scale intervention, but in which the prospects of reuse meet the needs of local communities. This is why micro-projects are born, with the final aim being not a completed intervention (at least not immediately)³² but the solution to some problems that prevent their use: lack of accessibility, effective internal distribution systems, extraordinary maintenance of the roofs, etc. The micro projects (Figures 20, 21) propose minimal adjustments, using innovative technological components that are clearly distinguishable and mostly reversible, integrating the communication of functions (past and new ones) with the use of multimedia.

We are therefore indebted to Carla Bartolozzi for an approach to the minimal project that she has been experimenting with in her studios for over ten years, working in urban and extra-urban settings, always on the border with complexes with a monumentality that is now widely consolidated, from the Ricetto of Pavone Canavese (2012), to the Castle of Orio Canavese (2013), the Castle of Masino (2014), the rural



village of the Abbey of Staffarda (2016-2017), the Hunting Palace of Stupinigi (2018, 2019, 2020, 2022, 2023), the broad context of the historical heritage managed by Piedmont Regional Council in the Park of La Mandria (2021, 2023), the castle of Frinco (2022), through to the appurtenances of the Preceptory of Sant’Antonio of Ranverso (2024) and, returning to the city of Turin, addressing themes of industrial archaeology with the Paracchi building (2024).

This project experimentation activity is not built and conducted alone. It is always shared with the main stakeholders who work throughout the territory and who are the first to express interest in a sustainable project shared with that territory.

Instead of conclusions

The prosperous path of experiences, outlined only slightly in this contribution, suggests the objective difficulty of compressing everything into a few conclusive notes.

With this mind, I prefer to use this short text to thank Carla Bartolozzi, of whom I have the honor of considering myself a student, for the many opportunities for comparison and debate in academic activities and professional experiences.

Thanks for the past and future advice and suggestions, which I am sure will always be present.

Thank you, Carla, for always sharing and defending free and independent thought!

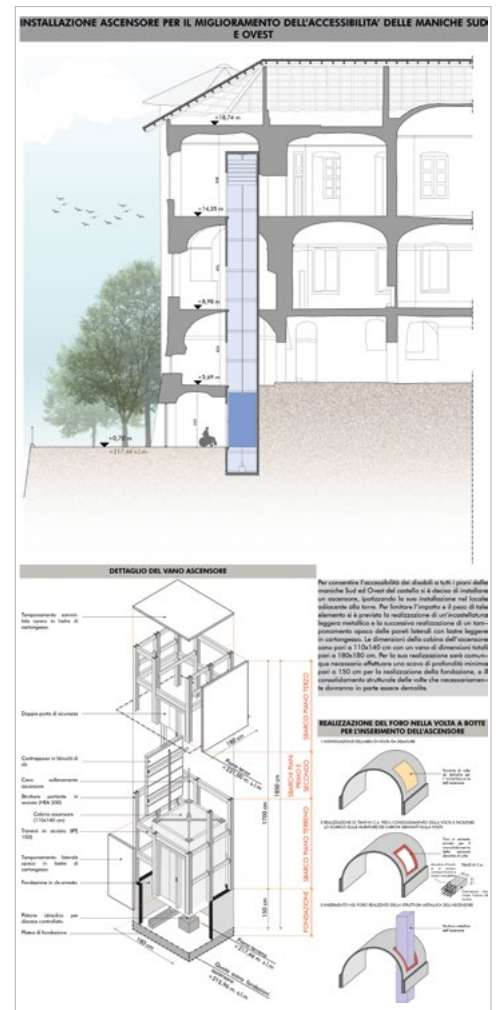


Fig. 21 – Frinco Castle (AT), Elevator installation to improve accessibility, Integrated restoration and conservation Atelier, Master’s degree course in Architecture for sustainability, students: A. Carena, F. Demichelis, V. Scagnoli, academic year 2021-2022).