ARCHITECTURAL BACKBEAT: REINTERPRETING THE TRANSFORMATION OF VILLA LAURI IN MACERATA (ITALY) /

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Abstract. This study explores the concept of 'backbeat' in architecture, analysing buildings that subvert the natural progression of forms to align with ideologies, styles, and histories that twist reality. These buildings often produce mimetic architectures serving not as witnesses of their time but as fictions of a past era. Inspired by Achille Bonito Oliva's notion of the 'traitor' who modifies an unacceptable reality, this research focuses on the 'deformation' of architectural forms as expressions in counter-time. This ambiguous concept encompasses both negative and positive meanings, akin to backbeat in music, creating vibrant notes. Villa Lauri has undergone numerous extensions and alterations over time, resulting in a heterogeneous complex. After a period of neglect, the villa is now being restored. The eastern portion, the most compromised, has been declared of 'no cultural interest' by the Superintendency, allowing demolition of incongruent buildings and their replacement with an auditorium. The proposed renovation project aims to re-establish the villa's architectural balance and symmetry while introducing contemporary elements. The new auditorium will be inserted between the historic villa and the original small end building, maintaining a harmonious dialogue with the existing architecture. The double-tiered portico and set-back glass façade echo the restored left wing's proportions, while the cladding, pillar shapes, and added volumes give it contemporary character. The foyer features a suspended volume containing the hall and evoking shapes reminiscent of a musical instrument. By integrating modern construction techniques such as steel prefabrication, the project ensures seismic resilience and construction efficiency. The structural elements and materials respect and reinterpret the villa's historical aesthetics, emphasizing the value of architectural dialogue as a creative force. The restoration of Villa Lauri shows how intervention can transform historic buildings into functional, vibrant spaces, respecting their heritage and contributing to the dynamic preservation of history, offering new life to structures.

Introduction. The objective of this article is to present a design intervention that enhances, through a contemporary approach, an ancient asset that over time has undergone numerous modifications, eventually losing part of the identity that historically characterised it. The intervention on Villa Lauri, a historic residence located in Macerata, in the heart of the Marche Region, involves the demolition and reconstruction of one of the wings that, during the early 20th century, expanded this significant 19th-century mansion originally intended for leisure and recreation.

The villa, a significant example of 19th-century Italian neoclassical residential architecture, has recently been the subject of targeted interventions aimed at preserving and redeveloping the building, with the intent of restoring it to the community and preparing it for new functional uses.

Following various changes in ownership from the original family who inhabited it, the villa first came under military control, later transitioned to public ownership for use as a hospital, and is now under university ownership.

History and context. Villa Lauri occupies a position that embodies the typical characteristics of 19th-century Italian suburban residences. Situated outside the historical centre of Macerata (an Italian municipality and the capital of the province of the same name in the Marche region) and away from areas that have subsequently experienced urban expansion, the villa originally benefited from isolation and tranquillity—qualities ideal for a countryside residence. Designed in 1841 by the architect Ireneo Aleandri, also renowned for the famous open-air theatre, the *"Sferisterio of Macerata"*, Villa Lauri was conceived as a country residence. However, over the decades, it underwent numerous transformations and expansions that, at times intrusively, compromised its original integrity. After a period of splendour, the villa was abandoned for many years until, in 2002, the University of Macerata acquired the property with the aim of preserving its history and renewing its function. The villa represents a significant example of Italian neoclassical architecture. The central structure, protected under heritage legislation since 1920, retains characteristic elements such as rusticated masonry, mouldings, decorated cornices, stone balustrades, Doric columns, recessed pilasters, and porticoes. The complex is surrounded by a botanical reserve spanning over 44,000 square metres, hosting tree species protected by the Cultural Heritage Authority.

Throughout its history, Villa Lauri has served various purposes, reflecting the changing needs of its owners. After the death of Count Lauri, the sole heir of the family, the villa was repurposed as a shelter for soldiers afflicted with smallpox during the Great War, and later as a sanatorium for tuberculosis patients. Abandoned in 1982, it remained unused until it was purchased by the University of Macerata. In 2021, the central body and the right wing were restored, returning to their former glory. Today, they house the Confucius Institute and the China Centre, which feature libraries, classrooms, meeting rooms, laboratories, offices, and a student residence with twenty-four beds.

Project Objectives. The intervention on Villa Lauri was driven by the need to recover and enhance an important historical complex, complementing it with a new architectural volume designed to meet contemporary functional requirements.

Previous modifications and expansions of Villa Lauri did not always adhere to a coherent design approach, particularly in the eastern wing, which evolved into a series of superimposed structures resulting from immediate functional needs, lacking formal consistency with the architectural complex. For this reason, the Cultural Heritage Authority authorised the demolition of the eastern portion of the building, deemed disharmonious and lacking cultural significance, to make room for a new auditorium serv-

ing the villa's current role as part of the university's facilities.

The new structure has been conceived as an innovative element fostering dialogue between historical and contemporary architecture, addressing modern functional and structural needs while enhancing the park and offering new opportunities for community use. The project strikes a balance between preservation and contemporary reinterpretation, aiming for a design that reflects the present without disregarding the historical context.

The new building, though employing contemporary materials and forms, integrates harmoniously with the 19th-century villa and represents a significant case study in dynamic architectural heritage conservation. The intervention seeks to engage with the historical architecture through a modern language and innovative construction techniques.

The auditorium, based on a modern interpretation of the volumes and proportions of the historic villa, is located between the main building and the terminal structure. It echoes the proportions and details of the villa without resorting to mimicry.

Compositional and Structural Solutions

Design Choices. The design of the new auditorium serves as an example of dialogue between contemporary architecture and historical heritage, with particular attention paid to harmonious integration within the existing context. The intervention is characterised by a two-level portico featuring a recessed glass façade, which reinterprets the original proportions of the historic villa in a modern key.

This design choice, which respects heights, rooflines, and volumetric hierarchies, ensures that the original central structure remains the focal point, preserving its visual clarity despite previous alterations, such as the addition of an extra storey on the left section. The auditorium itself has been conceived as a suspended volume, with forms that evoke a musical instrument—a symbolic reference to the building's cultural function.

On the northern side, the stage extends outward into the surrounding park, creating a direct connection with the landscape and enabling the space to be utilised for summer events. This design element strengthens the relationship between interior and exterior, highlighting the interaction between architecture and its natural surroundings.

The extension of the stage into the park, along with the reinterpretation of proportions and volumetric hierarchies, represents a synthesis between respect for historical heritage and the desire to create a space suited to contemporary needs. The use of contemporary materials and forms, such as modern columns and cladding, was designed to engage in a harmonious dialogue with the historical architecture, while deliberately avoiding the replication of its stylistic features. This meticulous attention to detail ensures the preservation of the architectural complex's historical identity, while simultaneously introducing elements of innovation.

The two-level portico, with its recessed glass façade, not only respects the historical proportions but also serves as a visual and functional link between the new and existing spaces. The internal spatial layout was designed to ensure a rational and functional use of the various areas, with particular emphasis on the foyer and the auditorium, which represent the two central elements of the intervention. The double-height foyer creates a spacious and welcoming environment, facilitating connectivity between the building's different levels. The auditorium, by contrast, appears as a suspended volume, underscoring its centrality from both an aesthetic and functional perspective.

From a technological standpoint, the project employs modern construction techniques, such as steel prefabrication, which ensure both construction efficiency and seismic safety.

In summary, the project aspires not only to be a conservative restoration but also a reinterpretation that enhances the dialogue between past and present. The intervention aims to restore the original architectural balance while integrating new functionalities and formal languages that enrich the complex without compromising its identity.

Structural and Material Choices. The project addressed various challenges related to the construction of a building that met functional, aesthetic, and sustainability requirements. From the feasibility stage, multiple structural solutions were considered, including reinforced concrete, timber, and metal. The final choice fell on a steel structure for the following reasons:

- Compact dimensions of structural elements, allowing greater flexibility in the internal spatial layout.

- Seismic resistance and durability, due to the elastic properties of steel.

- Compatibility with lightweight infill systems, such as dry partitions, which reduce overall weight and enhance the building's seismic performance.

The use of steel point elements for the columns allowed for an optimisation of the internal spaces, avoiding the dimensional constraints of other solutions, such as timber. All metal components were treated with intumescent coatings and plasters to ensure REI 60 fire resistance.

The external infill walls were constructed using a stratified dry system with high-performance fibreglass-reinforced gypsum boards (Siniat AquaBoard type). These boards, supported by metal substructures, provide increased flexibility and consistent behaviour with the main structure during thermal expansion and seismic events. The system incorporates high-density mineral wool panels to optimise thermal and acoustic insulation, fully complying with NZEB (Near Zero Energy Building) standards.

For the exterior cladding, a combination of materials was chosen:

- 2 cm-thick terracotta strips, applied to a reinforced fibreglass base to give the main façades a traditional appearance. The strips are fixed with adhesive systems and supported by metal frames (AQB M100 6/10, spaced 60 cm apart), reinforced every 3 metres.

- Special cork and potassium silicate-based plaster, applied to other parts of the building to ensure durability and a tactile quality.

Description of Components and Technical Details.

Fixtures

The external windows were selected with a differentiated approach de-

pending on the building section. In the new auditorium, thermally broken aluminium frames were chosen to ensure structural lightness, resistance to weathering, and adequate energy performance. In contrast, the windows in the historic building are made of wood, designed in a *"historic centre"* style to align with the architectural characteristics of the building and the conservation-focused restoration. This distinction reflects the dialogue between tradition and modernity that defines the entire project.

Cladding

The external walls are clad with Solidtex Outdoor XT BA13 fibreglass-reinforced gypsum panels, capable of supporting a total load of up to 55 kg/m². The terracotta strip cladding has a weight of 49 kg/m², including adhesives and sealants, ensuring full structural compatibility. The wall stratigraphy includes cavities insulated with high-density rock wool, modulated to meet thermal and acoustic requirements.

Warping and bracings

The supporting metal structures are integrated with bracings designed to provide stability and resistance to lateral loads, essential for compliance with seismic regulations. The framing elements for the infill panels are dimensioned to support the cladding loads and facilitate the installation of insulation panels. The system's overall lightness helps to reduce the seismic mass of the building.

Energy and Acoustic Performance. The project incorporates advanced solutions for thermal and acoustic control, achieving high standards of thermal insulation through layers of mineral wool positioned within the metal structures. For acoustics, a scientific approach was adopted, calculating reverberation times and applying targeted solutions to ensure optimal sound intelligibility, as required for the auditorium's use.

Thermal insulation

The external infill wall system delivers high performance with reduced thickness compared to traditional systems. Insulating rock wool panels, placed between the metal studs, are designed to ensure stability and durability, meeting NZEB (Near Zero Energy Building) requirements for public buildings.

Acoustic insulation

The acoustic design complies with the requirements of DPCM 5/12/1997, with calculations performed to reduce reverberation time (TR < 2 seconds) and improve intelligibility (C50 > 2 dB). Internal walls, also constructed using dry systems, optimise seismic performance and acoustic insulation.

Roof and Foundation

The roof is designed as a multilayered system comprising vapour barriers, high-density rock wool panels, and an aluminium sheet finish to support the photovoltaic system. The foundation is insulated with extruded polystyrene, improving the building's overall energy efficiency.

External Layouts. The project also includes interventions in the external areas to ensure usability consistent with the new building and the historical context.

Perimetral pavements will be made of fibre-reinforced concrete with exposed aggregates and a smooth finish, bordered with terracotta to recall traditional materials. Pedestrian paths will use gravel over compacted sub-bases, while the parking area, featuring 20 car spaces and 4 for motorcycles, will be constructed using grassed paving blocks to maintain soil permeability.

At the eastern edge, a pedestrian ramp with a 7.5% gradient, constructed of concrete with terracotta borders, will ensure universal accessibility. The landscaping will be enhanced with new native species, including Quercus ilex.

Elimination of Architectural Barriers. The intervention on the public building was developed in compliance with Italian regulations, particularly D.P.R. 24 July 1996, no. 503, which establishes rules for eliminating architectural barriers in buildings, spaces, and public services. Additionally, reference was made to D.M. 236/89, which defines technical specifications to ensure accessibility, adaptability, and visitability, aiming to overcome architectural barriers.

The newly constructed structure is designed to ensure full accessibility. Internal horizontal pathways comply with suitable widths for wheelchairs, with spaces allowing for turning manoeuvres. At ground level, flooring is set at a single elevation without steps, except for a 2 cm threshold at entrances. An accessible toilet is included, designed for full wheelchair rotation, with furnishings and fixtures conforming to Article 8.1.6 of D.M. 236/89. Primary doors provide a clear width of at least 80 cm, as required by regulations.

In the conference hall, characterised by an inclined seating area with steps, access for individuals with reduced mobility is provided at the stage level, where two wheelchair spaces are designated, ensuring visual continuity with the seating rows.

The first floor is accessible via two internal staircases with 120 cm-wide treads, 30 cm depth, and 16.7 cm risers, as well as a lift. Horizontal pathways ensure easy movement and turning, with adequate space in main areas, including connective spaces, toilets, and staff offices.

For windows, handles are positioned at 115 cm height, and glazed surfaces feature opaque sections only up to 60 cm above the floor, allowing visibility for seated individuals in wheelchairs, as specified in Article 8.1.3 of D.M. 236/89. Internal doors have a clear width of no less than 80 cm, with fore and aft spaces dimensioned according to regulatory diagrams.

External pathways are designed to ensure full accessibility, with minimum widths of 120 cm (never less than 90 cm), frequent widening for turning manoeuvres, and longitudinal slopes contained within 8%, in line with Article 8.1.11 of D.M. 236/89. The overall configuration of external pathways also adheres to Article 8.2.1 of the same decree, providing universal accessibility and an inclusive experience for all users.

Conclusion. The design approach draws inspiration from the concept of *"betrayal"* described by Achille Bonito Oliva, wherein the architect modifies and transforms an unacceptable reality, creating new narratives. The project embraces change and innovation without losing sight of

the surrounding historical richness. Finally, the architectural concept of *"backbeat"*, borrowed from music, was applied to explore the deformation of forms as a way to express a unique architectural rhythm. This approach enabled the creation of new spatial experiences, establishing a dynamic dialogue between tradition and innovation.

Villa Lauri stands as a virtuous example of how architecture can balance past and present, creating a harmonious synthesis between history and modernity. The project highlights the importance of a critical and innovative approach to heritage preservation, offering a vision for the future that respects and enhances the memory of the place.

This intervention demonstrates the potential of contemporary architecture to foster harmonious dialogues between tradition and innovation, providing historical heritage with new opportunities for use and enhancement aligned with technological innovation and sustainability.

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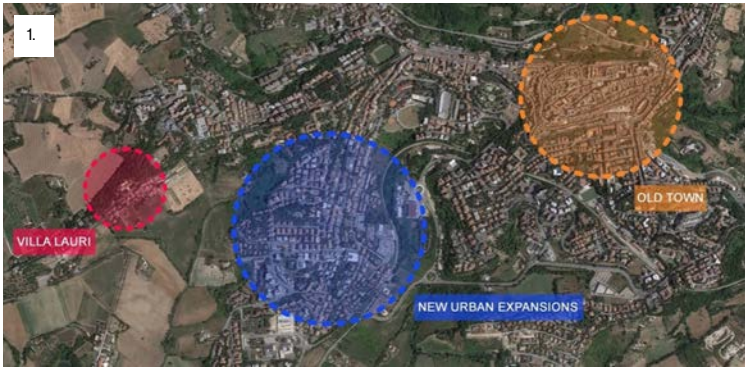
Figures.

FIGURE 1 – Territorial context of Villa Lauri.
FIGURE 2 – General project planimetry.
FIGURE 3 – Design choices from the historical building reinterpretation.
FIGURE 4 – South and north elevations and longitudinal sections of the auditorium.
FIGURE 5 – Ground floor plan and south elevation.
FIGURE 6 – Auditorium view from the back courtyard.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NEW URBAN EXPANSIONS
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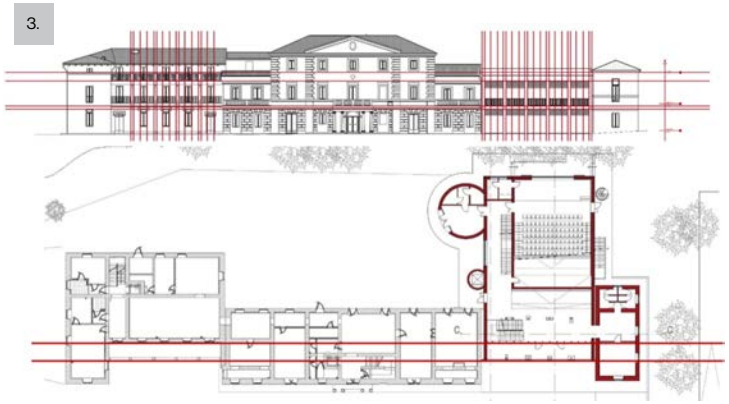
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